

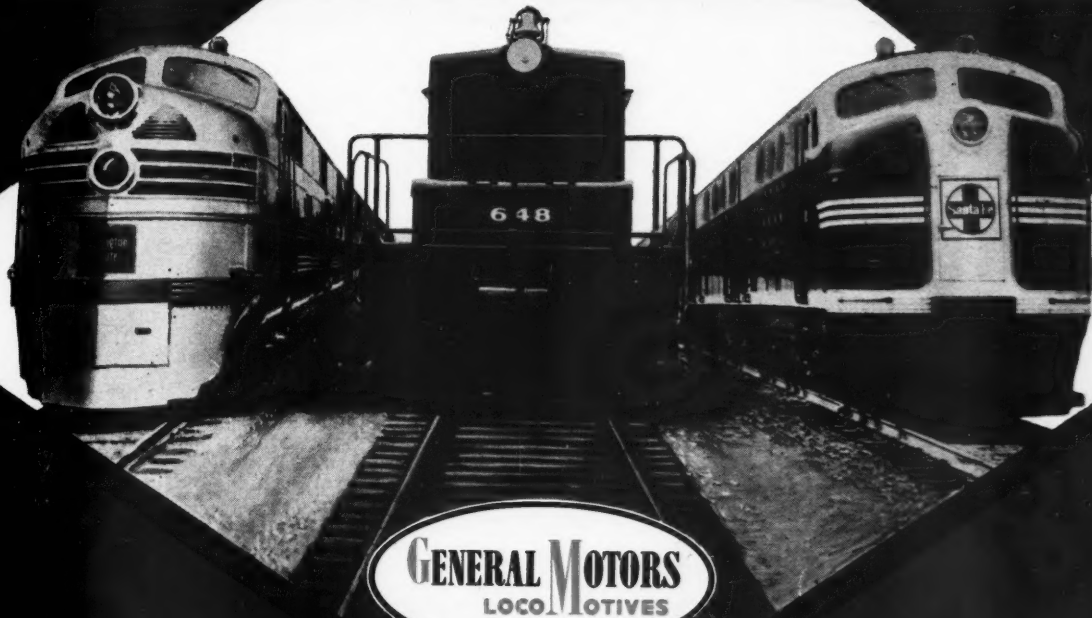
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PRINTED IN U. S. A.

Signaling Aids to Wartime Transportation!

CENTRALIZED
TRAFFIC
CONTROL

MODERN
TYPES OF
INTERLOCKINGS

CAR RETARDERS
AND YARD
COMMUNICATION

AUTOMATIC BLOCK
AND CAB
SIGNALING

"Union" signaling systems are recognized as important and essential factors in safeguarding and expediting vital train movements of men, machines and materials of war. By keeping more of the traffic rolling more of the time, these modern signaling systems greatly reduce or entirely eliminate the train delays experienced under former methods of operation.

"Union" C.T.C. expedites traffic and provides needed increased track capacity quickly in either single or multiple track territories.

"Union" Interlockings eliminate unnecessary train stops by permitting safe routes to be quickly lined up.

"Union" Car Retarders and Yard Communication speed classification of freight cars in terminal areas and greatly improve yard operating efficiency.

"Union" Automatic Block Signals, by reducing the headway between following trains, accomplish a marked increase in track capacity.

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Our organization is using every resource and facility at its command to aid the railroads in their transportation and material shortage battles. These systems will produce important increases in transportation capacity with minimum use of materials. Our engineers and district office representatives are at your service.

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The Week at a Glance

SPOTLIGHT ON MATERIALS:

This issue of *Railway Age*, while presenting its usual report of news developments, is devoted, in its editorial and feature pages, especially to an exposition of the more important aspects of the vital and pressing problem of securing sufficient materials to keep the railroads in efficient operation, as a necessary means to military victory. This problem is no longer the mere specialized worry of the supply officers—but hits the railroads in all branches. The dilemma of supply is a mechanical department concern—as it is of the operating, engineering, electrical, signal and all other segments of the industry. The supply job, and how adequately or inadequately it may be done, now affects public relations, finances, accounting, traffic—in fact, every phase of operations—just as much as do any of these departments' peculiar concerns. So all elements of the industry may have a fuller knowledge of this departmental problem which now has spilled over into all other departments, is the function of this issue.

GENERAL SOMERVELL: The Commanding General of the Army Service Forces says, in a statement on page 129 herein, that the railroads' work for the Army "has been by far the largest moving job in the history of America." This job, he testifies, the railroads have done "with outstanding efficiency" and without deprivation, though to be sure with some inconvenience, to civilian traffic.

THE NAVY'S OPINION: What the Navy has called upon the railroads for has been the "seemingly impossible"—so Vice-Admiral S. M. Robinson bears witness in a statement on page 129 in this issue. Nevertheless, Admiral Robinson goes on to say, "the railroads have risen to the occasion" and have performed the task. Lend-Lease Administrator E. R. Stettinius writes in like vein of the carriers' service to his branch of the war.

DONALD NELSON'S VIEW: When the war production program was begun, the nation had such a vast store of unused or little-used resources that small initial deprivation was felt by the civilian economy. But, in 1942, when war production reached 59 billion dollars, military needs required large diversions of materials and facilities from peace-time production. This year, with war manufactures at 105 billions, the progressive curtailment of civil consumption has grown greatly in severity. Considering how winning the war is the most important job we face, Donald Nelson in a statement herein tells of the system developed by WPB to distribute scanty supplies where they will fulfill the most cogent requirements of the nation's well-being.

WHAT EASTMAN WANTS: The Director of the ODT on page 133 herein outlines his view of the problem of keeping the railroads supplied so that they may

not falter in their service to the nation at war. He especially hopes that additional steel-producing capacity will shortly become available and that the transportation industry will be allotted a reasonable share of its output; that carriers will limit their requests to their minimum requirements and will continue selling surpluses to their neighbors; that there will be no recession in efforts at conservation. For his part, Mr. Eastman promises to continue "to seek aggressively from the WPB the necessary materials and equipment" for the country's transportation.

SUPPLY OFFICERS PRAISED:

John J. Pelley, Roy B. White, and H. A. Scandrett join their voices to that of Joseph B. Eastman in commending the work of the railways' supply officers—in an article which begins on page 133. Mr. White is especially appreciative of the study which these railway departmental leaders have given to carrier needs—and the consequent ability with which they have been able to present their claims to the proper governmental agencies. Mr. Pelley takes heart from the fact that, while there is no let-up in the nation's demands on the railroads, there is likewise no observable relaxation, either, in consistent effort by the carriers to do the job, however hard. Mr. Scandrett's theme is the high degree of co-operation among the railroads themselves, and between the carriers, their customers, and governmental departments—not forgetting the supplies of railway materials.

WHAT RAILROADS CAN DO:

Chairman Krampf of the P&S division of the A. A. R. on page 136 in this issue, outlines six suggestions which, if followed by the railroads, should improve their over-all materials situation. In brief these suggestions are: (1) Reduce inventories; (2) order maintenance materials on a current basis; (3) intensify standardization and simplification; (4) develop reclamation further; (5) push substitution; (6) continue the scrap campaign. He elaborates on these points, showing specifically wherein there is opportunity for further pursuit of them.

HOW TO LOSE THE WAR:

Our bombers are concentrating on the enemy's railroads. Many military observers even go so far as to believe that the war can be won in this way—with a minimum of reliance on surface combat. It is, perhaps, less generally appreciated that *what our bombers are doing to the enemy's railroads can be done to our own railroads here at home by denying them adequate materials to keep going.* An article on page 137 herein surveys the relationship between inadequate materials and transportation failure, and gives plenty of food for speculation as to why, if damaging the enemy's railroads is likely to win the war for us, then letting our own carriers deteriorate may not be an apt way to lose it.

INVENTORIES NOT TOO BIG:

While railroads have large aggregate supplies on hand, there are severe shortages of numerous critical items. Just what the inventory situation is, is outlined in an article beginning on page 142—which also explains the essential differences between railroad stores and those of merchandise for sale. Some of the more critical "short" items are named. The necessity for large supplies of some classes of materials is brought home by the recent flood in the Mississippi Valley. Where would the railroads be if they had to wait for supplies to meet such an emergency, while their orders were being processed through the creaking complexity of the federal materials control mechanism? Such floods may not come once in a life-time, but if they do come and the railroads do not have supplies to cope with them, who will do the explaining to the military and to John Q. Public?

BARGE LINE RED INK:

The Federal Barge Line incurred an operating deficit in 1942 of close to 800 thousand dollars, as is disclosed in its annual report reviewed in the news pages herein. This loss does not, however, greatly disturb the line's chief, Chester Thompson, who points out that—like all such socialist enterprises—the barge line's objective is not profit—but rather to "save" money to shippers at the taxpayers' expense. The present barge line chief observes that his relations with other carriers are "most friendly and co-operative"—a happy situation which represents some improvement over the regime of his predecessor, General T. Q. Ashburn, who, it will be recalled, never failed to add a large helping of insult to the injury which he inflicted on the self-supporting transportation industry of the country. Mr. Thompson is at least polite in his references to the intended victims of his efforts to undermine free enterprise in transportation.

VS. WAGE RISE FOR OPS:

The railroads' brief in the operating unions' wage case has been filed with the emergency board and is reviewed in an article in this issue. The carriers rest their case on the President's "hold-the-line" order. This directive, issued under power granted by Congress in last fall's Stabilization Act, instructs all wage boards to hold wages where they are—except where there are "gross inequities," or where "Little Steel" increases have not been applied, or where wage raises are needed to insure the efficient conduct of the war. The carriers contend that none of the excuses for failing to "hold-the-line" is applicable to the wage position of transportation employees—and, consequently, that an increase would violate the government policy for preventing inflation by control of wages and prices. Economic Stabilizer Vinson has vetoed a proposed emergency board wage increase of 13 cents per hour to Pacific Electric trainmen, trimming the boost down to a modest 3 cents per hour.

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Do:

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... order short lengths of many sizes. Standardization on a few sizes almost always results in lower cost per foot and much quicker delivery.

... send your order in without specifying conditions of installation, supplying properly certified allotment number or symbol and Army, Navy or other government contract number—if any. This information is necessary before your order can be included in our production schedule.



OKONITE is able to supply many types of electrical wires and cables subject, of course, to War Production Board limitations. If you need insulated electrical conductors, get in touch with your nearest Okonite representative; he can help you in many ways . . . The Okonite Co., Passaic, N. J.



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Electrical Cables for Every Railroad Use

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RAILWAY AGE

The Railways' Service of Supply

Procurement for the railways consists of acquiring locomotives and cars, materials and fuel. The work is done by the purchasing officers on the requisition of technical officers, and under the supervision of the chief executives. In an industry whose annual purchases of equipment and materials normally aggregate about \$1,125 million, and of fuel about \$300 million, it is one of the most important functions of management.

It would be hard to exaggerate the extent to which war conditions have increased the difficulty of the problems of procurement, or the resourcefulness and energy that their solution has required of purchasing and stores officers. Scarcity of critical materials has made it much harder to decide *what* and *from whom* to order. After orders for the railways have been placed, there has been unprecedented difficulty in getting them filled, because manufacturing plants have been jammed with government orders, in getting materials for filling which manufacturers have had difficulty; and these government orders have had precedence over the orders of railroads, which have been treated as "civilians."

The increases in railroad traffic have been entirely unprecedented. Total units of freight and passenger traffic handled in the first five months of 1943 were 80 per cent greater than in the first five months of 1929, the record pre-war year. The railroads had to handle this traffic with 28 per cent fewer locomotives, 10 per cent fewer freight cars and a proportionately smaller number of passenger-carrying cars than were available in 1929.

In the five-year period ending with 1929 they installed about 1,500 locomotives and 95,000 freight cars annually. In 1942 they got only 712 locomotives and 62,600 freight cars. In the first six months of 1943 they were able to get only 293 locomotives and 9,415 freight cars. Their continuing inability to get anything approaching an adequate amount of new equipment has created a greatly increased need for materials for maintaining old equipment. The terrific hammering of the tracks also has created need for increased materials for maintaining them. The total inventory of materials that the railroads had on hand at the beginning of 1943 was less than in any year from 1917 to 1928. And yet in the first four months of 1943 they received only \$259 million of materials, a reduction of 16 percent compared with the same period in 1942.

Considering the difficulties, it has been a great achievement for the purchasing and stores departments to get as much materials as they have, and to keep them so well distributed and supplied to widely scattered shops, repair tracks and over 250,000 miles of far-flung railway lines. The story of what they have accomplished and how it has been done is told in articles elsewhere in this issue. No army can continue to move forward victoriously unless its service of supply functions efficiently and successfully. The purchasing and stores departments are our railroads' service of supply; and that our railroads, in spite of enormous difficulties, have thus far met all the demands made upon them by a traffic which has increased at an entirely unprecedented rate into much the largest volume per mile ever handled by any railway system on earth, has been largely made possible by the effort, the resourcefulness and the efficiency of its service of supply.

Efficiency
FOR VICTORY

Taking Up the Slack

Nowhere has the tightening up and trimming down process to which the use of materials by the railroads has been subject during the past year and a half been more evident than in the mechanical department. The procurement of new materials is dependent upon the volume of stores stocks and much ingenuity has been exercised in finding ways and means of reducing stores stocks as well as of reducing the amount of material actually used in restoring the serviceability of cars and locomotives.

Great economies have been effected in the amount of materials used for the repair of cars and locomotives by the reclamation of materials which ordinarily would be disposed of as scrap and by various measures to reduce the amount of stores stocks. Sizes and styles of many kinds of material and parts have been reduced by standardization and the protection stocks for retired equipment either disposed of or adapted to other uses.

By such means the railways have helped themselves in a nation-wide shortage of materials which has made it difficult to secure materials in the quantities desired and to get them delivered promptly. On the whole, it must be said that, by hook or by crook, materials have been available in sufficient quantity to prevent serious delays in returning cars and locomotives to service and that the procurement problem has been one more of delays in deliveries and of getting around general rules which do not recognize exceptional situations than of any complete deprivation of materials which can be proved to be essential. One of the means by which the railroads have helped themselves has been in the accumulation of a certain amount of deferred maintenance, usually of the kind which can be deferred without immediate impairment in the safety of operation or serviceability of the equipment.

The procurement of new cars and locomotives, however, presents a different picture. Here the signs of inadequacy are much more evident. The intensity of utilization which reached record values last Fall with respect to both freight cars and locomotives has continued at near peak values almost ever since. The capacity to maintain high intensities of utilization during a few weeks in the Fall is one thing and to maintain them continuously for months at a time is quite another. Evidence of the growing strain on motive power is the continued reduction of locomotives stored serviceable, which are rapidly approaching the vanishing point, and the unprecedentedly low freight-car surpluses which, during last Spring, went even lower than during the highest weeks last Fall. Present indications are that during the third quarter there may be not over 200 more locomotives for freight service and 4,000 more freight cars than were available a year ago.

When looking to the future ability of the railroads

to maintain their present enviable record of transportation service, it must not be overlooked that their success in keeping record-breaking percentages of both cars and locomotives in serviceable condition and in getting unprecedentedly intensive use out of each unit has depended in a large measure on a tightening-up process. The slack has been taken up in material stocks, maintenance has been deferred, and the idle hours of cars and locomotives have been put to effective use. These are not miracles and cannot be repeated.

War-Time Functions of Procurement Departments

The outbreak of the war found the long-established and highly organized railway procurement departments basically well prepared to cope with the many new and highly involved problems that have arisen in the procurement and distribution of materials. There was little in the way of precedent to serve as a guide for the new and exacting duties imposed upon officers and personnel during the most critical period in our history. Nevertheless, they boldly tackled the most complex problems that ever have taxed the ingenuity and resourcefulness of procurement officers.

The measure of their success is the successful functioning of the railways, which would have been impossible but for their efficient work. Removed from the limelight of accomplishment, they have been unremitting in their efforts. Their functions have been expanded in many respects far beyond their normal duties, to encompass many phases of the difficulties attending the war-time procurement and distribution of essential commodities and materials. Their individual efforts, and the co-operation of the Purchases and Stores division, AAR, as well, have been of inestimable value in promoting the control and distribution of materials to the railway industry as the most important unit of war-time transportation.

In addition to their regular duties, it has fallen to the lot of individual railway purchasing agents in many instances to act as arbitrators or referees within their own railway organizations, in the temporary adjustment of material specifications designed to better the procurement and distribution of materials essential to adequate war-time maintenance of railway equipment and facilities. In addition to establishing new sources of supply for regular materials, it has devolved upon them to develop pertinent data and sources of war-time substitutes for many critical materials. Hedged in by governmental regulations, and overburdened with the study of innumerable regulatory orders, as well as the preparation of a vast amount of supplementary data and forms required to accompany thousands of purchase orders, and hampered by the loss of trained employees to the military service, railway procurement officers have been quick to enlist

the assistance that has been made available by the manufacturers of railway materials through their sales representatives. Here again, as liaison officers, the men of the purchasing and stores departments have exerted a profound influence that in many instances has averted or broken potential bottlenecks in the flow of railway supplies.

Tracks and Structures Must Be Maintained—Or Else!

There is no more fundamental fact concerning the railroads today than that to underestimate or neglect the needs of their fixed properties—tracks, bridges, yards, terminals, fuel and water facilities, etc.—is to undermine the railways as a whole. Serious as this would be under any conditions, it becomes critical in the light of the fact that to undermine the railways would just as certainly undermine the country's war effort.

No one questions the importance of an adequate supply of cars and locomotives to meet the already huge and increasing demands for military transportation superimposed upon essential civilian demands; but it is axiomatic that not a car or locomotive wheel could turn without the track structure, and that they can turn with assurance, speed and safety only as the adequacy of the track structure and of other elements of the fixed properties permit. It is equally true, unfortunate as it may be under present conditions, that the adequacy of these facilities requires that they be maintained, strengthened and expanded in keeping with traffic demands, and that this can be done only with the aid of materials, including rail, track fastenings, crossties, structural steel, stress timbers, etc. The nature and magnitude of the material needs of the fixed properties are discussed at some length in an article in this issue—at some length because the needs are many, and in some cases urgent; because they are apparently not fully understood or recognized by government agencies in Washington which exercise direct or indirect control over the materials involved; and because, as a result, the railways are not being allowed or are finding it impossible to secure the quantities of materials that are essential to the continued adequacy of their fixed properties.

With general deterioration and abnormal wear due to abnormal traffic greatly outstripping replacements, and with inadequate facilities at many points delaying train movements and wasting thousands of car and locomotive days, not to mention the adverse effect on the movement and safety of both passengers and freight—civil and military—these matters are of deep concern to every engineer and maintenance officer, for theirs is the prime responsibility that the fixed properties of the railroads shall not cripple war transportation and the over-all war effort of the country.

But to be effective, that concern must be articulate. It must find expression first in a most careful analysis of their material requirements in the light of present conditions and prospective traffic demands, and second, in forceful, persistent demands that these requirements be met, and in time to prevent irreparable interference with the war effort.

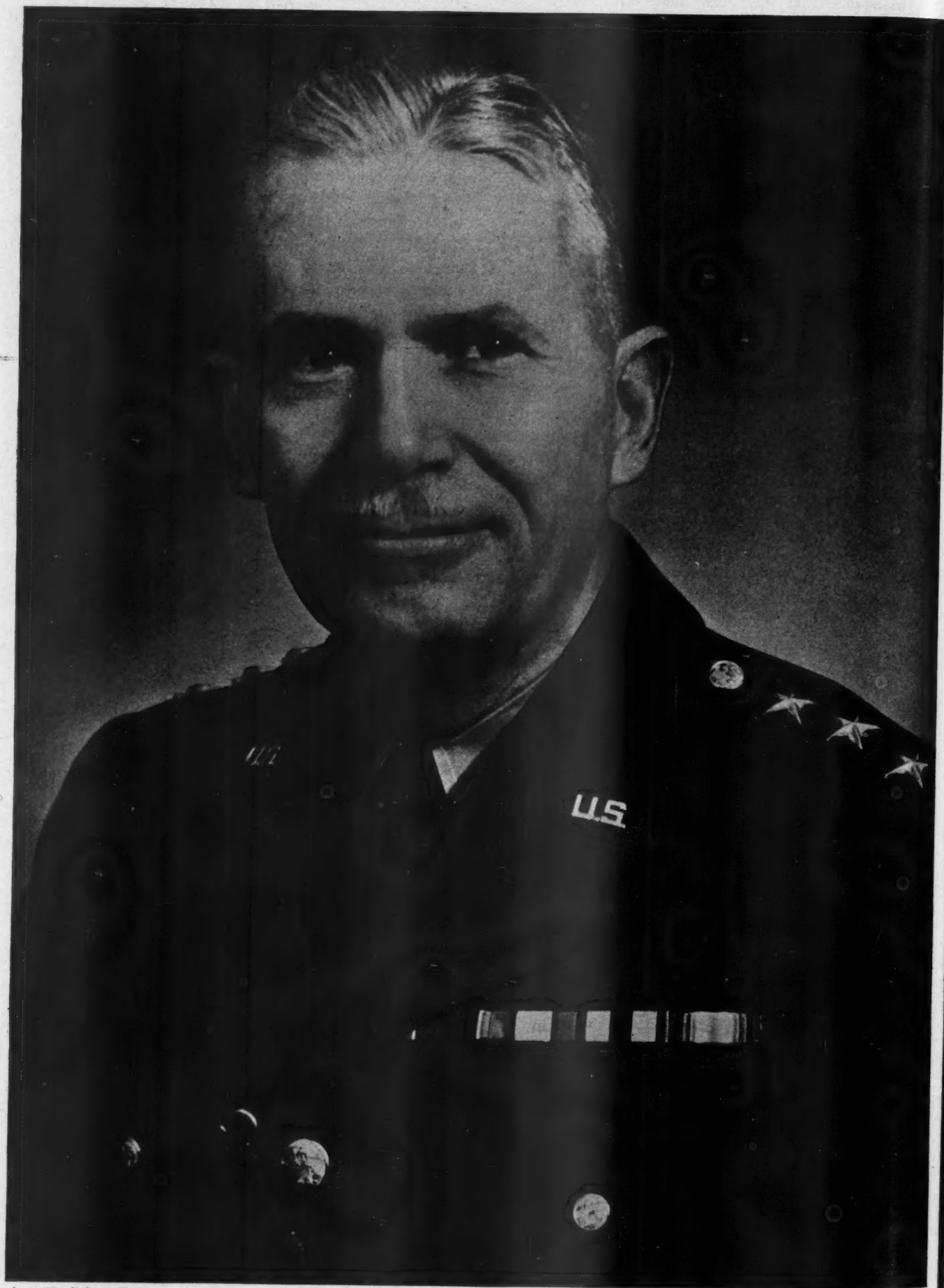
It can be expected that such demands will draw criticism from those uninformed or less concerned as to the serious consequences involved, but such criticism, rather than being a deterring factor, should be accepted as evidence by engineering and maintenance officers that they have not "sold" adequately the imperative character of their needs, and that they must increase, rather than decrease, their efforts to secure the materials essential to continued adequate war-time transportation. Along with the challenge to make the most of all materials on hand, through careful use, salvage, reclamation and repair, no greater challenge faces these men today.

Materials for Signaling

The materials and equipment used in the various forms of railway signaling involve such a wide variety of items that the manufacturers as well as the railway officers in charge of their procurement and distribution are to be commended for maintaining a fairly constant flow of these supplies to the railroads during the war period up to date.

One hurdle that they had to overcome was to convince certain persons that the quantities of signal supplies needed cannot now be determined on the basis of a time interval, established by past experience. For example, primary battery elements are consumed in the operation of signals, and the increased number of trains requires more operations of the signals, and, therefore, earlier replacement of the batteries. Likewise the wear on bonds for rail joints and on insulation for insulated rail joints varies with the number of trains as well as the speed and length of these trains; still another factor is the efficiency with which the joint ties are tamped. All these circumstances have been adverse since we entered the war, and increased quantities of bonds and insulation for insulated joints have, therefore, been required. In some instances the supply has not kept pace with the demand, and needless train stops and delays have resulted.

During the last two years, the use of metal for ground rods has been restricted, and even if the rods had been available, the railroads have been short of men to install as well as to test them. Furthermore, there have been more than the normal number of severe lightning storms in many sections of the country during the last six months. The result has been that lightning has damaged an unusual number of relays, signal motors, lamps, transformers, etc., and the repair and replacement of these devices has required



Army Signal Corps Photo

Lieutenant General Brehon Somervell, Commanding General, Army Service Forces

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more than the normal quantities of supplies, which in turn has slowed delivery in numerous instances. Among the corrective measures which must be taken to overcome this condition are the careful testing and replacement of, or addition to, grounds, connections, arresters and other forms of lightning protection.

Since the outbreak of the war, new signaling construction has been confined primarily to centralized traffic control projects, and in each instance the railroads have been required to support their applications to the War Production Board with proof that the proposed installations will contribute to an increase in war transportation. After the Board has issued the

necessary allocations, the various materials have been produced fairly promptly, with the exception of insulated wires and cables.

Large quantities of insulated wire and cable are required by signaling systems for replacements in kind, as well as for new construction. The insulation and the copper wire are scarce items, for they are in such demand in war products. As a result, the signaling field has gotten along with such quantities of insulated wire and cable as has been allotted by the authorities. More is definitely needed, however, and undoubtedly will be allotted to the railroads as soon as consistent with the war program.

Railroads' War Effort Praised

IN keeping with the times and the community of interest that exists among men who work with similar materials toward similar ends, this issue includes statements by three of the most outstanding contemporary figures in material procurement for war—Lt. Gen. Brehon Somervell, Commanding General, Army Service Forces, U. S. Army; Vice Admiral S. M. Robinson, Chief, Office of Procurement and Materials, U. S. Navy; and Edward R. Stettinius, Jr., Administrator, Office of Lend-Lease Administration. These men carry great responsibility for the progress of the war as a result of the vast quantities of materials and equipment, including materials and equipment furnished by the railroads and the railway manufacturers, for the Army, the Navy and governments of the United Nations; and they also represent three branches of the war effort to which efficient and adequate railway transportation service is vital. Their messages speak for themselves, and their courtesy in utilizing the facilities of this paper to express their good will to the railroads and the railway manufacturers, in the midst of war, is a high compliment to the railroad industry.

Lieutenant General Brehon Somervell

Commanding General, Army Service Forces, U. S. Army

American railroads and American railroad men are accomplishing one of the most brilliant achievements in this global war.

With limited equipment, with constantly diminishing manpower, with forceful leadership through the Association of American Railroads, with elimination of peace-time competition, the carriers have pooled their brains and their equipment to move the Army as demanded. It has been by far the largest moving job in the history of America. It has been done with outstanding efficiency.

All of this enormous Army movement has been performed while handling the civilian needs of the country.

Not even pleasure travel has been rationed, though luxury elements have been eliminated. The trains have been late sometimes, but they have always arrived.

The public has been inconvenienced, but the traveler has reached his destination.

When you consider that the nation's normal freight and passenger business has proceeded while the railroads have cleared this additional huge Army load, you arrive at a conception of the size of the job the carriers have accomplished.

Railroads and railway manufacturers have also furnished rails and other materials and equipment required for military programs and assisted in other ways in the Army's construction and procurement problems.

The Transportation Corps and all other elements of the Army Service Forces, therefore, salute the railroads and railway manufacturers for their enormous contribution to the success of our war effort.

Vice Admiral S. M. Robinson

Chief, Office of Procurement and Material, U. S. Navy

There has always been a most cordial relationship between the Navy Department and the railroads, and since the beginning of the war, the Navy has been obliged to call on the railroads to perform seemingly impossible feats in the transportation of personnel and munitions. In every case the railroads have risen to the occasion and have shown an ingenuity peculiar to Americans in performing the task.

Through a determined effort, the railroads have managed to increase greatly the tons of freight loaded into each car and the number of miles traveled per car per day. The Navy Department has co-operated very closely in this respect and has done everything in its power to reduce delays and to avoid cross-hauling of freight.

In the transportation of petroleum products, the rail lines are particularly to be congratulated because of their success in moving to the eastern seaboard the huge quantities of oil required to service the war operations.

The Navy Department is a relatively small consumer of the products of railway manufacturers, but in all cases of procurement of this type of material, the Navy has experienced unflinching co-operation. In many instances, railway manufacturers have devoted a portion of their facilities to the production of Navy equipment and have done an excellent job in using all of the energy and re-

sources at their command in the prosecution of the all-out war effort.

The sincere appreciation of the Navy Department is extended to the railroads and to the manufacturers of railway material not only for greatly increasing their output of transportation, but for the many intangible aids they rendered when called upon by the Navy.

Edward R. Stettinius, Jr.

Administrator, Office of Lend-Lease Administration

Lend-Lease is an integral part of our war program and is making an important contribution to our united war on the Axis powers. Soldiers of the other united nations are carrying on the fight on all major war fronts with the aid of equipment and materials furnished by the United States under Lend-Lease. Much of the credit for getting the war materials to the fronts where needed and when needed belongs to the American railroads and equipment manufacturers.

Vitally needed railway equipment has been made available to our allies. In spite of the heavy demands of our own transportation system and military services, the railway equipment manufacturers have adjusted their production schedules to furnish the equipment needed by Lend-Lease. This equipment has been approved even though the manufacturers have been greatly handicapped by shortages of critical materials and manpower. As a result, the war against the Axis, particularly on the Russian front, is being waged with greater effectiveness.

Since the beginning of the Lend-Lease program, Lend-Lease goods valued at more than \$11,000,000,000 have been sent to American ports for export to all parts of the world to aid our allies in the fight against our common enemies.

These shipments have included 5,000,000 tons of food and more than 6,000,000 tons of iron and steel. Other industrial products and munitions have amounted to many more millions of tons.

The Lend-Lease program has increased greatly the traffic of American railroads, already burdened with the traffic resulting from our own war activities. As a result of the co-operation of the railroads and the splendid job which they have done, Lend-Lease goods have moved swiftly and continuously to their various destinations.

In providing the thousands of articles necessary in modern warfare, we have drawn upon every section of the United States, from tiny factories on sidings far off the main lines as well as from enormous plants in the large industrial centers, from mines and farms and food processing plants. Wherever the source, we must tap it if we are to maintain the flow of war supplies to our ports and thence by ship to the theaters of world war.

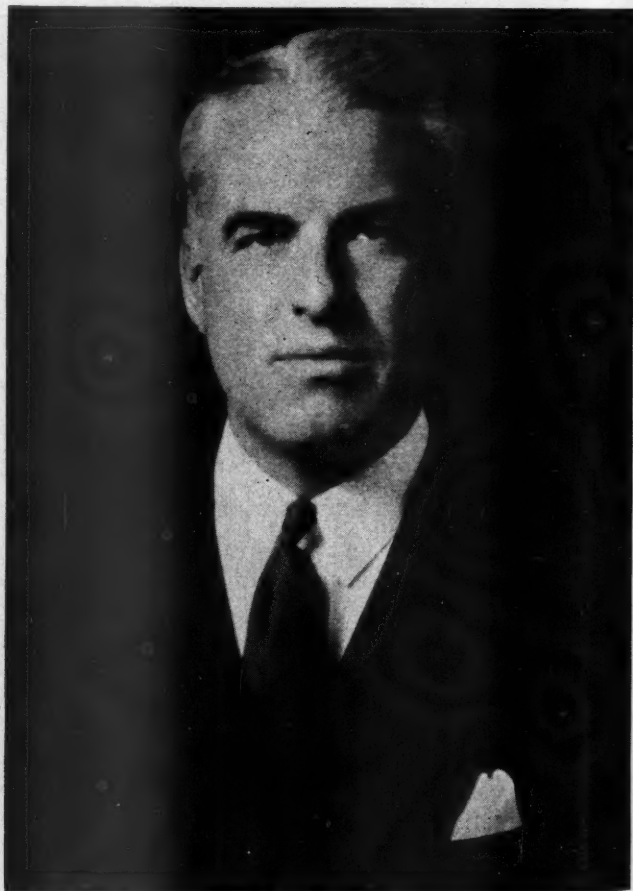
The task of Lend-Lease is vast because of the great size and variety of its demands. If we were unable to call upon the railroads for speed and efficiency of transport, the task would be impossible.

America is accustomed to efficient service from its railroads, but in this, our greatest emergency, the roads have written their brightest chapter: They have come through with a performance that sets a new mark for railroading. They are making a major contribution to our united war effort.



U. S. Navy Photo

Vice Admiral S. M. Robinson
Chief, Office of Procurement and Material, U. S. Navy



Edward R. Stettinius, Jr.
Administrator, Office of Lend-Lease Administration

Donald Nelson Points Out Need for Materials Control



O. E. M. Photo

Donald M. Nelson

In the following, the head of the WPB traces the developments leading to the measures adopted for channeling materials into most vital uses

BEFORE we at home can hope for victory and peace, we must accomplish a more formidable production task than has ever been attempted before. We must realize to the full the tremendous potential of American industry and American transportation.

The 1942 total war program of \$59,000,000,000 is $3\frac{1}{2}$ times that of 1941 and almost 20 times that of the second half of 1940. The program for 1943 amounts to the huge total of \$106,000,000,000, an increase of 80 percent over last year. Such an undertaking can be made possible only by the complete cooperation of labor, management, agriculture and transportation, and by rigid governmental control of our nation's total supplies of raw materials.

So great were the country's unused resources in 1941 that civilian economy was able both to replace the resources diverted to the war effort and to find additional men and materials to meet a war-stimulated consumer demand. In 1942, however, the balance began to swing. As the war effort grew it became more and

more difficult to replace the resources diverted from civilian production.

By the end of 1942, restrictions on less-essential uses of most metals had become so rigid that virtually no further diversion to military production can be expected from this source. The restrictions in effect at the beginning of 1943 were severe—so severe that allotments for such uses as railroad equipment and maintenance, agricultural tools and machinery, and industrial repairs and maintenance are being increased above estimates made last December.

The scarcity of vital materials will remain a critical limiting factor on war production during 1943. The tightness of steel, copper and aluminum, especially, necessitates prompt and decisive shifts if we are to attain balanced output, keep stocks at a level adequate to insure continued production, and prevent impairment of essential supporting services.

The easiest way to understand the system of materials control as it exists today is to look back on how it has grown. In the early days of the defense program, priorities simply meant putting first things first—giving preference to military orders when they conflicted with ordinary civilian production. That was sufficient when military production was only a small part of the total national output.

Toward the end of 1941, America was carrying a substantial war program on top of the greatest volume of civilian production ever attained in one year. Tank

production was boosted from virtually zero to many hundreds a month, while 3,700,000 electric refrigerators were produced. During the same year some 50,000 machine guns were turned out, as were more than 1,500,000 typewriters. Plane production of about 2,000 a month was achieved in the same year that saw an all-time high of 5,000,000 motor vehicles produced.

Then came Pearl Harbor. The President set production goals which startled the world. The Office of Production Management, designed to direct and control a defense production program, was abolished. On January 16, 1942, the War Production Board was established, with authority to assure "maximum production and procurement for war."

The pressure was on, and there was no time to plan a nicely balanced program. There was only time to start producing—right now, as fast as possible.

Early in February the WPB issued an order which stopped the production of automobiles and turned the industry to tooling up for tanks, guns, planes and other weapons. In quick succession came limitation orders to insure that steel, copper, aluminum, and other vital materials went into war goods. Within a few months the great consumers durable goods industries were virtually shut down as such for the duration.

Contracts in the billions of dollars were signed by the government procurement agencies. New plants were built and peacetime plants converted into war factories by the thousands. Manufacturers who couldn't make a war product separately, pooled their resources and took a contract together. Altogether about 70,000 prime contracts and 700,000 subcontracts were let during the year.

The production curve climbed steadily. In March the rate of munitions production was twice what it had been in November. By June it was three times greater. There was, however, no way to completely budget our materials until we knew what all the requirements were, both military and civilian.

Soon the increase in production began to falter. The answer was, in part, materials shortages. More steel, copper and aluminum were being produced than ever before, but not enough.

The production jump after Pearl Harbor made it evident that the priorities system designed to handle defense orders of two billion dollars a month was not applicable to war orders of five to six billion dollars a month. Our existing raw materials were not sufficient to handle these war orders in addition to our consumer goods production. An overall shortage of critical materials became the chief problem—not who was going to get served first, or how quickly.

It soon became clear that materials had to be budgeted and allocated. More preference ratings were being given out than there was material available. Copper, for instance, had ratings running down to A-10, but there was only enough copper to fill orders down to A-1-C. A manufacturer with a lower rating might just as well have had no rating at all.

The Production Requirements Plan, a big improvement, was set up as a means of allocating materials on the basis of the quarterly needs of the various manufacturers. It proved inadequate principally because it did not compel that the total program would be kept within ability to produce and because it did not make sure that some components wouldn't be manufactured at the expense of others. Some manufacturers, determined to keep their plants on schedule, ordered more materials than they needed before they needed them.

Late in 1942 a major step forward in the solution of this problem was made with the introduction of the Con-

trolled Materials Plan and of a centralized WPB review of schedules. The two innovations go hand in hand, and are resulting not only in a more rigorous coordination of the country's resources but also in the determination of more realistic and meaningful production schedules. The major outlines of the production task before us are now sufficiently firm to permit us to do the more specific type of production planning that will assure the maximum utilization of resources.

CMP provided overall controls extending throughout the production process. Complete and planned determination of the flow of all resources in a complex war economy is undoubtedly unattainable, but important steps toward this objective have been made.

Control Applied to Three Metals

The Controlled Materials Plan gets its name from the control which is applied to the three metals, steel, copper and aluminum, which are specifically allocated under its terms. It is believed that if production is controlled in terms of these three metals, the distribution of other metals will be relatively simple. It may develop that some other materials will have to be brought under similar control. But of the materials widely used for production, steel, copper, and aluminum are believed, at the present time, to show the greatest shortage relative to demand.

Control of material, however, is really only half of the job undertaken by the new plan. The other, and perhaps more important half, might be called "Controlled Schedules." Schedules are to be limited to the material available, as a condition of the allotment; thus schedules will be controlled not only on the basis of what is wanted, as heretofore, but also in terms of what can be realized from the raw materials available.

The Controlled Materials Plan ties together the control of material and the control of schedules through the simple procedure of making raw material allotments through the same channels followed in setting the production schedules. For example, the Army sets the production schedules for the prime contractors for tanks; under CMP the Army will also allot the material to the prime contractor of tanks, who in turn will re-allot it to his sub-contractors, also setting production schedules for his sub-contractors. If it becomes necessary to cut the amount of material available for the production of tanks, the Army will reduce the production schedules of the prime contractor and, at the same time, reduce the amount of the material to be made available.

Comprehensive, nationwide programming must be achieved in the widest sense of the word, comprising basic decisions as among military, indirect military, and civilian production; and within each of these areas among the major categories production controls must be coordinated. The Controlled Materials Plan should permit a much closer coordination between the flow of materials and a given set of scheduled end-product objectives. Even so, it will be necessary constantly to review objectives in relation to resources, so that the entire burden of programming is not placed upon the mechanism for distributing materials. The successful evolution and implementation of this plan is one of the most challenging tasks for 1943.

The year 1943 will be one in which there is certain to be much discussion of and conflict over the extent of government direction, regulation, and control of the economy. Whatever controls and regulations are considered should be carefully appraised in relation to their contribution toward the earliest winning of the war.

Acclaim for a Job Well Done

Four transportation leaders pay tribute to constructive performance of the purchasing and stores officers

THE outstanding achievements of purchasing and stores officers in meeting the abnormal material needs of the railways in these difficult days are set forth in statements that follow. It is encouraging to note that these achievements are recognized by officers high in the administration of the railways as a whole, as well as by those in charge of individual railways. Indicative of this attitude are the following statements by Joseph B. Eastman, director, Office of Defense Transportation; John J. Pelley, president, Association of American Railroads; R. B. White, president, Baltimore & Ohio; and H. A. Scandrett, trustee, Chicago, Milwaukee, St. Paul & Pacific.

A Job Well Done

By Joseph B. Eastman*

MATERIALS and supplies required for maintaining and operating a railroad are as essential to its successful operation as guns and ammunition are necessary to secure victory by the armed forces. The function of the railroad supply department is to procure and deliver to the using departments the materials for maintenance and operation at the points and in the quantities needed. These functions are similar to those of the army service forces, formerly called the services of supply of the army. There has been the closest cooperation between the War and Navy departments, the Office of Defense Transportation, and the railroads since our entry into the war. Major General Gross, Chief of Transportation, Army Service Forces, has complimented the railroads for their performance in the following words:

"It was to handle this complex and many-sided problem that the Transportation Corps was formed. Since its inception, nothing but complete co-operation and mutual understanding of the problem involved in moving troops has been experienced from the railways. They have done a remarkable job and there is every indication that they will continue the excellent performance."

Similar sentiments were expressed by Rear Admiral Jacobs, Chief of Naval Personnel, and I have frequently expressed my own appreciation of the remarkable services rendered by the railroads in the present emergency.

Early in 1942 the war construction program indicated such a heavy demand for steel, copper, and other critical materials that some form of priority or control was required to obtain the necessary materials for maintaining the railroads. Preference Order P-8 for procuring material for freight cars was first issued by the War Production Board, and this was followed by Preference Order L-97, covering materials for locomotives. Subsequently Preference Order P-100 covering materials



Joseph B. Eastman

required for other repair and maintenance work was issued. This order, however, covered maintenance materials for all industries, so that the railroads were not particularly helped by it.

Substitution and Reclamation

To correct this situation, there was issued by the War Production Board in April, 1942, an order known as P-88, which provided that each railroad should file quarterly with the War Production Board a tabulated request for materials needed for maintenance. On the basis of this report, the War Production Board extended to each railroad, after due consideration of its inventory situation, priority ratings for its subsequent quarterly requirements. The detailed information required on this form was readily available, as the majority of the railroads maintain their "Inventory Records" on the basis recommended by the Association of American Railroads.

The supply department officers are constantly calling to the attention of the using departments possibilities of substitutions for critical materials; and I wish to take this opportunity to commend the remarkable work that has been done in this respect by the many joint committees that have participated in this work. I should also mention the reclamation work on the railroads. Although reclamation always has been a subject in which supply officers were actively interested, it has

* Director, Office of Defense Transportation.



Roy B. White

been given added emphasis by war requirements. This work of substitution and reclamation has made available for war purposes large amounts of such critical materials as copper, steel, and aluminum. Also a substantial contribution has been made to the war effort in the way of conservation of material through the reduction of inventories. This has been accomplished by the constant decrease of stocks in storehouses in outlying points and the centralizing of stocks to a greater degree than ever before.

The conservation of materials by the railroads, as described above, has added substantially to the fund of critical materials for war purposes. In this way the supply officers of the railroads already have contributed greatly to the war effort and are adding to this contribution every day.

In conclusion, I express the hope that

(a) Additional steel-producing capacity will soon be a reality, so that the various claimants may find that the available supply will meet their combined minimum requirements and that transportation agencies will receive an adequate share thereof.

(b) All railroads will keep their requests to a minimum, consistent with actual minimum requirements

(c) All railroads will continue as in the past to sell to their neighbors materials not required by themselves.

(d) All railroads will continue to follow fully every conservation program.

For our part, the Office of Defense Transportation will continue to seek aggressively from the War Production Board the necessary materials and equipment for the maintenance of operation of the transportation system of the country.

Again I wish to emphasize the fine work being done by the Purchasing and Stores officers of the railroads under most trying conditions, and it is with deep appreciation I say, "Another war job being well done."

Make a Fine Record Under Difficulties

By R. B. White*

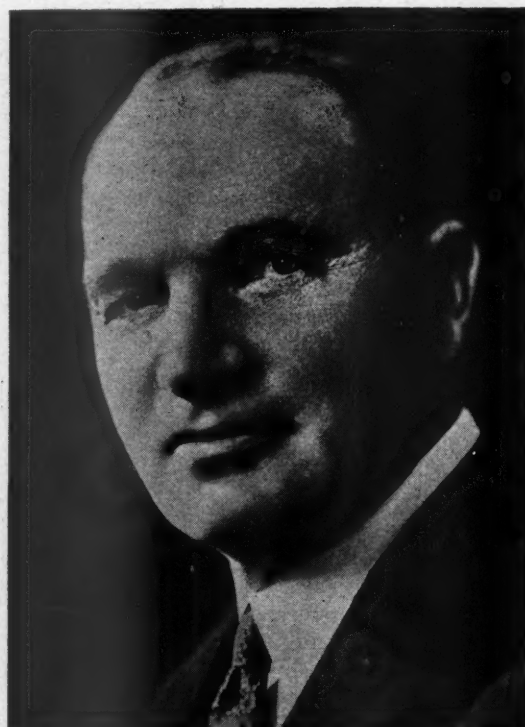
The record covering the first year and a half of the war is one of which the forces handling the procurement of materials and supplies for the railroads can be very proud.

It is generally realized that material procurement cannot be handled today according to normal procedures, and that many details have to be worked out before allocations are made. The railroads have endeavored to provide adequate transportation by the minimum use of critical materials, and, so far, have done an unusual job in this respect. This has unquestionably been an important contribution to the war effort. The success they are now having in securing material requirements is due in a large measure to the fact that the purchases and stores officers have realized the importance of this factor from the beginning and have trained their organizations accordingly.

The railroad requirements have been studied with painstaking consideration and ably presented to the governmental agencies that have been created to control the critical materials. In commenting on this splendid work that has been done by the procurement forces of the railroads, it would be remiss not to mention the valuable assistance given the railroads by the Purchases and Stores division of the Association of American Railroads, the Office of Defense Transportation, and the Equipment section of the War Production Board in the allocation and distribution of the railroads' share of critical materials.

The constantly increasing demand for railroad transportation will undoubtedly further increase the railroads'

* President, Baltimore & Ohio.



John J. Pelley



H. A. Scandrett

future requirements for materials, and I believe the co-operation of our supply departments with the Association of American Railroads and the governmental agencies will continue to be of great importance and assistance.

Supply Work Never So Vital

By John J. Pelley*

It now appears that during 1943 the railroads will be called upon to handle as much freight traffic and more passenger business than they did in 1918, the peak year of the First World War, plus as much as they handled in 1939, the last year of peace. To the supply departments of the railroads this means but one thing: a bigger and more difficult job to do—a job requiring alertness and resourcefulness to an extent never demanded before. The job of the purchases and stores people is not easy in the best of times. In these days, its difficulties have been multiplied many times.

In normal times, getting materials to keep the railroads running is primarily a matter of quality and price. Today, it is largely a matter of finding the materials and, after finding them, of doing the great amount of "paper work" necessary to obtain them.

In normal times, delivery of orders can be taken almost as a matter of course. Now the railroad supply officers have to consider the war-created uncertainties of manufacturing schedules.

In normal times, getting employees for the supply departments is never a great problem. Today, it is hard to find people to replace those who have joined our military forces.

* President, Association of American Railroads.

Despite these and other wartime difficulties of their jobs, the purchases and stores people have managed to meet their responsibilities. As traffic grows and its problems increase, these responsibilities will be more and more difficult to meet.

If the railroads are to continue handling the nation's war load, there must not only be a flow of materials to maintain and repair what they now have, but there also must be additional equipment, particularly locomotives. All of this means more for the supply departments to do. Not only must they obtain the materials in the quantities needed, and have them where they are needed when they are needed, but they must also conserve them, reclaim them, help to make them go as far as materials can be made to go. In these critical times, there is nothing to be wasted.

There is in sight no lessening of the load and no easing of the strain on the railroads, and there is not likely to be until the war is over. There has never been a time, therefore, when the work of the supply departments of the railroads has been so vital to the industry, to the country and to the world. Nor, happily has there ever been a time when, in spite of so many difficulties, it has been so well done.

Materials Procurement a Brilliant Performance

By H. A. Scandrett*

The performance of the railroads in handling the biggest transportation job of all time has been made possible by intelligent and unceasing effort, good organization and fine cooperation of the men and women of all ranks in every department—in a word, loyal and enthusiastic team work. On this team, and playing important parts, have also been our patrons, the Army and Navy and government organizations, notably the Office of Defense Transportation.

It is fitting that this issue of the *Railway Age* should be devoted primarily to the activities of the Purchases and Stores departments. With record-breaking performance throughout the industry, none has surpassed the outstanding accomplishments of these departments. With constantly developing shortages of certain materials, and the necessity of devising substitutes, these departments have been successful in procuring and distributing vital railroad equipment and materials without which the plants could not have operated. It is fortunate for the nation that when war came our Purchases and Stores departments were so well equipped and organized, as otherwise the results would have been disastrous.

To appreciate their problem it must be realized that for the materials easiest to obtain data must be gathered and orders placed for delivery at least 90 days in advance, and for critical materials that require governmental authorization up to 180 days is necessary. They have worked whole-heartedly with the authorities in Washington and have accepted cheerfully the vast increase in the volume of paper work made necessary by government control of material deliveries. They have played an important and useful part on committees appointed to determine the availability of materials and the

* Trustee, Chicago, Milwaukee, St. Paul and Pacific.

(Continued on page 141)

Roads to Victory in Supply Work

By L. P. Krampf

*Chairman, Division VI—Purchases and Stores—A.A.R.**

BECAUSE of the conditions now prevailing, the annual meeting of the Purchases and Stores division, Association of American Railroads, had to be deferred, and the many added duties of its members made it necessary to reduce to a minimum of two the number of committee reports. These reports—Subject No. 3, Scrap Handling and Preparation, Classification and Sale, and also Subject No. 3-A, General Reclamation—speak for themselves.† The activities of the Division have been confined to necessary meetings of the General committee, the Emergency General committee, the Scrap committee, the Reclamation committee, and the Forest Products committee; to monthly meetings of the Fuel Oil committee for the purpose of allotting fuel oil, and to group (regional) meetings held for the purpose of discussing the Controlled Materials Plan which became effective, as far as the railroads were concerned, on April 1.

While the activities of the Purchases and Stores division have of necessity been curtailed, the duties and responsibilities of the membership have increased. The record established by the railroads since this war—in fact, since 1939—is one of which everyone can be, and is, justly proud. Railroad performance is the greatest in its history, and railroad efficiency is at its best. The purchasing and stores departments of the railroads have contributed their share to the fine record.

The Controlled Materials Plan started April 1, 1943. Beginning with the third quarter (July 1), it is in full operation. Form PD-844 controls the allotment of materials to the railroads. It is somewhat different from the old Form PD-351. Form PD-844 gives a better picture of the railroads' requirements, is more simple, and requires less man hours to compile.

The Controlled Materials Plan has one decided advantage. When an order is placed in schedule by the mills for shipment in a certain month, it will be shipped in that particular month, or shortly thereafter. Under the old system, the railroads applied their priority to orders but had no assurance when shipment would be made, as orders of higher rating would receive preference. It is felt that this plan is advantageous and accomplishes the purpose of distributing equally the available supply of raw materials where they are most needed to further the war effort.

The railroads can and will assist in making the Controlled Materials Plan a success. The following suggestions will be helpful:

1. Reduce inventories as a whole to a practical minimum, either by use or through other disposition of the materials, concentrating especially on critical items, the determining factor being the length of time required to



L. P. Krampf

effect replacement. Reduce the surplus inventories by selling the materials to other railroads. In doing this, railroads help themselves and their neighbors, and lessen the demands on the mills and on the manufacturers.

2. Order materials for maintenance on a current basis.

3. Intensify the study of standardization and simplification of materials, as it will result in decreased demands for critical materials.

4. Further develop the work of reclamation and conduct a continuous study to save and repair every item of material possible. Reclamation has been practiced by the railroads for a great number of years. This war has merely been an added incentive to the railroads to intensify their efforts. A great deal has been accomplished, but more can, and should be, done.

More Substitutions

5. Substitution of critical materials by the railroads has been a noteworthy effort and has resulted in the saving of thousands of tons of steel. Wood is being used in place of steel for certain parts of closed and open cars undergoing general repairs, steel requirements having been reduced by the limitation of freight car and locomotive design agreed upon by the railroads. The use of narrow plates of steel in cars was adopted in order to release the wider width for the war effort. Carbon steel is being used instead of alloy for locomotive bolts. The use of copper has been reduced by the railroads for

(Continued on page 141)

* Supply Agent, Missouri Pacific Lines.

† Published in the *Railway Age* of July 3.

Railroads Must Have More Material

Liberalizing of policies toward carrier needs required to avoid breakdown of service under war load—Purchases in decline

AS the country enters the third stage of the war and the tacticians launch greater offensives East and West, it is consistent and prudent to direct attention to the need for materials by the domestic railroads because they are vital to victory and their material situation is not favorable.

The Army, the Navy and other war agencies are taking all the material they can get and available supplies must be distributed sparingly to others. It is, therefore, unfortunate, in one sense, that the railroads can't get along without material. It would be fortunate for other claimants if they required none; but that is not possible. They need cars and locomotives and materials for maintenance and for improvements geared to war, but they are not getting enough to keep them in condition—and the reason why is not because the materials and equipment can not be produced, but because the railroads are not permitted to obtain them.

Railroads Need Study

The trouble with the railroads' material situation is the grossly inadequate realization of the exact nature of the railroad business and the role that equipment and material play in it. Experiences with or impressions about railroads differ with people and the seasons. In the same community, railroads are variously regarded as an investment for savings or a field for speculation; as the creature of bankers; as an employer of labor or an enemy of labor; as a land owner; as a customer; as a disturber of sleep, a blocker of street traffic and a spoiler of property values, or as a source of taxes, assessments or community benefits; as a litigant; as a competitor; as an unprogressive business, or as something to be taken for granted. Scores of books have been written about railroads—the lighter pulps dealing mostly with railway travel; the heavier with their history, rates, financing, regulation and, in a few instances, with aspects of their technology. The book is rare that even touches on their requirements of material and equipment, especially in wartime.

During the depression, the public, in its extremity to find ways to restore business and employment, discovered that railroads are normally large and steady consumers of durable goods, only to forget it when better times turned its thoughts to things that appealed more to its fancy or profit. Even on the railroads, the emphasis in peacetime was placed on traffic promotion, train operation, labor relations, costs and earnings. Material and equipment held little interest as commodities except to the relatively small forces assigned to obtain them and to the manufacturers who sold them, with the result that railway men were handicapped in clearly establishing the over-all needs of the railroads when the war began; and uniform details of the kinds and quantities of materials consumed by all railroads in relation to traffic, sources of supply or kind of service were scant. Except for special cases, there was no more need for this previous to the war, in the view of management, than for the housekeeper to preserve the details of her expenses.

Under the circumstances, persons, military and civilian, who are directing the production and division of the materials for war could hardly be expected to have a uniformly sound attitude toward the railroads or their material requirements, especially when the emphasis is now on material for guns, bombs, tanks, ships, planes and other impedimenta of war or materials for plants in which to make them. With the public solidly behind its soldiers, military spokesmen have had the best of the argument in material distribution. Neither is it astonishing that persons who never liked the railroads or that some (though not all) who have represented other con-

What the railroads need during the emergency is less interference and more co-operation. Let them build the cars and locomotives and obtain the rails and other materials they need in the emergency and their continued performance is assured. Deny the railroads the materials they need and harass them with increasing refinement in remote control and failure begins—gradually and imperceptibly at first—then with accelerated speed until the structure collapses as suddenly as a river bank that has been undermined. To what profit are enemy railroads destroyed if railroads fail on the home front?

sumers of critical materials have been cold to railroad requests for material and have accused them of selfishness in the quantities they seek. On the other hand, recent statements and testimony by high military officers in recognition of railway material needs have not passed unnoticed.

These attitudes confuse and complicate the issues but do not alter the underlying nature of the problem or its relation to the war effort. Since the war began, this country has made one discovery about its railroads—the discovery that these railroads are indispensable to the country and not only fulfill their normal functions as carriers of freight and passengers, but also meet emergencies created by the collapse of rubber and water-borne traffic and cause less trouble and expense to the armed forces than any other operation involved in preparing for and continuing the war. The public is now aware of the phenomenal increases in the traffic handled by the railroads and responsible spokesmen of the multitude of services, both civil and military, which have depended on the railroads for the movement of troops and materials to camps, factories and ports, have been frank in their surprise and praise of the carriers' performance. It has been one of the bright spots in the country's war effort.

The thing of most significance at present is that the railroads are carrying a record traffic with fewer loco-

motives and cars than they had previous to the depression and in the last war—have been getting fewer additions to their equipment and less and less material for maintenance, both in quantity and in relation to their traffic—are on notice that they will receive even fewer additions to their equipment and fewer materials for maintenance in the months ahead—but are expected to handle even more traffic than previously.

The railway facilities of the country consist of 516 line-haul railroads and 210 switching and terminal companies with approximately 380,100 miles of tracks. On December 31, 1942, Class I railroads had in service 42,099 locomotives, 1,742,744 freight train cars (excluding about 78,000 company service cars), and 35,000 passenger train cars, which excludes about 7,000 cars owned by the Pullman Company and about 275,000 freight cars owned by private car companies. This was 15,472, or 27 per cent, fewer locomotives; 564,100, or 24 per cent, fewer freight cars; about 32,000, or 30 per cent, fewer company cars; and 17,239, or 32 per cent, fewer passenger train cars than they had in 1929; and about 20,700, or 32 per cent, fewer locomotives; 611,540, or 35 per cent, fewer freight cars; and 18,921, or 35 per cent, fewer passenger train cars than they had in 1918.

phone, telegraph, and by direction of seasoned men on the ground; it has also required the intensive use of equipment and facilities. The locomotives are no longer taking 30 minutes every 50 miles for water and coal and 16 hours to run 100 miles, as they did when the father of WPB's chairman pulled the throttle near Hannibal, Mo., but are running 500 or more miles at a stretch and turning around without dumping fires, with many road locomotives doing 100,000 miles a year, and, as a group, aggregating over a billion miles per year; while switchers and Diesels are averaging 20 hours of work per 24-hour day. Neither are freight cars standing on side tracks and industry spurs under loads as in War I, but are shuttling back and forth over the country at passenger train speed; while it is a rare passenger car in main line service that fails to make 150,000 miles a year—and this is routine.

In the utilization of railway equipment in a country as large as the United States, there are a theoretical limit and a practical limit of perfection, and however much railroads or anybody else should strive to reach the theoretical score in equipment utilization, there is a practical limit beyond which it is futile, if not dangerous, to strive without additional equipment. Moreover,

Prominent Members of the Requirements Committee, WPB



Signal Corps Photo

Brig. Gen. L. D. Clay,
U. S. Army



Rear Admiral Henry Williams,
U. S. Navy



Col. Williard F. Rockwell,
U. S. Maritime Commission

Yet the railroads carried about 162,000,000,000 revenue ton-miles of passenger traffic in 1942 and 638,069,000,000 ton-miles of revenue freight, which was 43 per cent more revenue freight service than in 1929, and 57 per cent more than in 1918. They carried this business, moreover, much faster than in previous years.

Much Wear and Tear

The success with which the unprecedented traffic has been handled has required planning, supervision, coordination and co-operation by carriers, shippers and war agencies through regulations, correspondence, tele-

freight trains, passenger trains and locomotives that perform 2,000,000,000,000 ton-miles of work per year require vast supplies for their operations; and track and equipment, which are taking the pounding of present operations, however tough and durable they are, must be kept in repair, and their efficiency and dependability require quality and regularity in maintenance work. This is equally true of the bridges, trestles, fuel and water stations, and auxiliary power required in railway operations. With all due respect to the principle that the railroads should confine their purchases in wartime to absolutely essential materials for absolutely essential needs, moreover, it is unsound to suppose that a plant as

far flung and as vital to the war as the domestic railroads does not require new facilities and changes in layout the better to serve military requirements and objectives.

Many self-appointed commentators and judges of the railroads were horrified to learn a few years ago that, in contrast with motor trucks which are depreciated in five years, and airplanes whose life is measured in hours, the majority of railroad cars and locomotives were over 20 years old and the age of many exceeded 30 years. The retirement of this equipment on the basis of 20 years for locomotives and 30 years for freight cars would require at least 2,000 new locomotives and over 75,000 new freight cars annually.

Trend of Equipment Down

Class I railroads installed an average of 1,500 locomotives and 93,000 freight cars annually previous to 1929; and during the five-years of the depression from 1932 to 1936, they retired 10,895 locomotives, or 10,464 more than they installed, and 518,228 freight cars, or 444,988 more than they installed. Installations then totaled 441 locomotives and 69,118 freight cars in 1937; 252 locomotives and 15,213 freight cars in 1938; 298 locomotives and 23,236 freight cars in 1939; 421 locomotives and 60,455 freight cars in 1940, and 632 locomotives and 76,392 freight cars in 1941—a total of 2,044 new locomotives and 244,414 new freight cars in the five years, as compared to 5,740 locomotives and 298,046 freight cars retired. They requested authority to build 974 locomotives and 113,594 freight cars from October, 1941, to October, 1942, and were able to obtain only 783 locomotives and 80,874 freight cars. In July 1942, the railroads submitted a program of minimum requirements for new equipment for the twelve months, October, 1942, to October, 1943, consisting of 900 locomotives and 80,000 cars, and in November were promised 386 locomotives and 20,000 freight cars for the first six to eight months of 1943. The War Production Board more recently declined to allocate materials for building any additional locomotives and freight cars during July, August and September, while no passenger car construction has been permitted since 1940. In general, modernization and conversion of rolling stocks have been restricted proportionately, with the result that over 65 per cent of the locomotives and over 40 per cent of the freight cars in service are over 20 years old. Only 600,000 cars, or 30 per cent, are equipped with modern draft gear; 90 per cent of the tank cars are over 20 to 30 years old, and the less said about some of the passenger cars, save the luxury equipment built since 1934, the better.

Short on Rails

In 1918, 99 per cent of the rails in track was under 110 lb. per yard and the average weight was 80 lb., and the railroads installed 2,100,000 net tons. New rail averaged over 2,000,000 tons per year, or 1.7 tons per million gross ton-miles of freight traffic, up to and including 1929 when the rails in service averaged 90 lb. per yard. Following the depression, when track was greatly undermaintained for want of funds, the roads resumed rail laying, installing 1,140,000 tons in 1937; 670,000 tons in 1938; 980,000 tons in 1939, and 1,120,000 tons in 1940. In 1941, 1,330,000 tons were laid, which was 1.0 tons per million gross ton-miles, and less than 2 per cent of the 25,000,000 tons in main line track.

In 1942, the railroads requested 2,100,000 tons of rails

for laying in 1943; had their requests cut to 1,800,000 tons by ODT; were allowed 480,000 net tons by WPB for the first quarter of 1943 and received only 433,000 tons; were allotted 351,000 tons for the second quarter and received 359,000 tons; requested 600,000 tons for the third quarter and were cut to 376,000 tons. The railroads have over a billion ties in service which would require replacing at the rate of 50,000,000 a year, if their life averaged 20 years. Yet ties are now also included among the materials which are being brought under regulation because of their scarcity and planners are even toying with the idea of pooling the ties railroads buy.

Railroad material requirements are not confined to locomotives and cars and rail ties, however, but to thousands of items of iron and steel, lumber, copper and other parts of locomotives and cars, and to frogs and switches, tie plates, rail anchors, bolts, rivets and nuts that hold the track together; to items of metal and wood in signals and communications; also to post, poles, wire and hardware for thousands of miles of telegraph and telephone lines for crossing signs and fences. They include timber and hardware and steel for bridges, trestles, docks, piers and buildings necessary to railway operation; picks, shovels, drills and other tools required by railway track forces and shop men; materials for tractors, trucks, hoists, elevators and chutes required for loading and unloading cars and handling material between shops and freight houses; and the pipe and fittings of every size and type for water, steam, gas and heat lines. The requirements also extend to materials for welding and cutting in shops; to gears, motors, switch work and other accessories for power houses and machine shops; to chemicals for preserving wood, cleaning valves, charging batteries, treating water and disinfecting cars, and to thousands of raw, finished and fabricated materials and supplies, including greases, lubricants, coal, soap and paint supplies required to keep the plant going, to say nothing of the provisions for the dining cars and other services which the railroads must furnish for their own employees and the public. Many materials have been discontinued for the duration because they are not essential to transportation in wartime, but the requirements of essential materials grow.

Purchases Decline

Last year, when the railroads felt the full brunt of the controls over materials, their purchases totaled \$1,260,000,000, comprising \$426,000,000 of fuel, \$118,000,000 of forest products, \$440,000,000 of iron and steel products, and \$273,000,000 of other materials for maintenance and operation and approved building. This was \$90,000,000, or 10 per cent, less material from manufacturers than the railroads obtained annually in the five years previous to 1930, and \$141,000,000, or 45 per cent, less than they obtained yearly prior to 1925; and it included materials that were required to overcome some of the undermaintenance that developed during the depression. The startling fact about railway purchases, however, is that the railroads have been receiving less each month since March, 1942, although their traffic and, therefore, the wear and tear on the plant, has been increasing and now exceeds the traffic previous to 1929 by over 40 per cent.

During the last half of 1942, the railroads moved 904,000,000 ton-miles of freight, which was an increase of over 11 per cent over the first half of 1942, and 20 per cent over the last half of 1941; but they received only \$323,000,000 of maintenance materials during the

last half of 1942, which was 17 per cent less than they received either in the first half of 1942 or in the last half of 1941. The decline continued, with aggregate materials received by Class I railroads for maintenance and operation during the first four months of this year totaling only \$220,600,000, which was 18 per cent less than they received in the first four months of the previous year. Counting ties and rail as well as other material for maintenance and operation, exclusive of fuel, the railroads received only \$259,050,000 in the first four months of 1943, as compared to \$308,455,000 in the first four months of 1942, or a reduction of 16 per cent. The prospects of getting material are slight, moreover, judging from the recent notices from the War Production Board to railroads that their aggregate requests for steel for delivery in July, August and September were reduced over 40 per cent, or relatively more than the steel requested by other claimant agencies.

Declines in railway purchases would not necessarily be alarming at this time, except to the railroads, if the railroads were not essential to the war effort; or were so localized in their operation and influence as not to threaten widespread dislocation in essential civilian and military programs if they should suffer impairment or

but an indivisible part of the entire railway operation over which war materials and food move from source to destination without regard to railroad ownership and that a failure in the service of one railroad in time of war has its repercussions on the service other railroads perform.

This does not say that the relative importance of different services performed by the railroads should not be studied for the opportunity of separating the unimportant services from those of paramount importance, but with most intervention to particularize railway services, it is all too frequently overlooked that a freight car and a bridge must be just as strong to carry military traffic as non-military traffic, and that a railroad plant whose ability to operate is curtailed for the war traffic of today may be inadequate for the war traffic of tomorrow.

Failures Increasing

Neither is it sound to demand positive proof of failures in transportation nor to wait for these failures before relaxing restrictions on material or equipment for railroads nor to require positive proof of the necessity of material long before it is to be used. Yet failures at-

The Committee Which Allocates the Materials for Claimant Agencies



Universal Press

J. A. Krug,
Program Vice-Chairman, WPB



Brig. Gen. B. E. Meyers,
Army and Navy Aircraft



H. C. L. Miller,
Lend-Lease Administration

fail through want of material; or if the carriers were actually using critical materials for non-essential railway work; or if the prospects for an early consummation of the war were assured. The railroads are so essential, however, that if they were to fail in the work they are now being called upon to perform, it would then be discovered, but too late, as in War I, that good railroad-ing requires material as well as men and lots of it. It would also be discovered that a freight car or a locomotive is not merely a detached unit of equipment but a link in rail traffic that determines whether the chain is long enough or strong enough for the load, and that one railroad is not merely a holder of a WPB priority

tributable to insufficient materials are occurring. They are occurring in tank car movements and in track. In 1941, there were 5,772 failures of rail in service and 20,408 cases of rails found defective by detection before failures occurred in service, as compared to 4,721 service failures and 15,064 detected failures in 1940—an increase of 36 per cent. Reductions in the margin of safety in track and equipment have already required lengthening of train schedules.

It accomplishes little to argue, as it has been advanced recently in Washington, that failures from wear and tear could be reduced by cutting passenger trains 25 per cent when passenger trains, at best, account for no more than

12 per cent of the wear and tear on track and that a 25 per cent reduction on this basis could only affect the wear and tear by 4 per cent. Neither does it help to argue that passenger train speeds should be cut in half to reduce wear and tear, considering that passenger trains also carry the mail and express and that it would require more trains to handle a given tonnage when there are not enough trains now. Moreover, no railroad is going to permit a breakdown to occur from want of material if it can possibly be avoided—certainly not merely to prove the need of material.

It is usually too late to wait until a break occurs before beginning the long cycle of present day material procurement.

Railroads Deserve Confidence

What the railroads need during the emergency is less intervention from persons who have not made railway operation their business before the war began and more recognition of their ability to function and to know what kind and quantity of materials are required for the purpose and plenty of cooperation in getting them. They are not only entitled to this in the same degree as the armed forces are entitled to recognition of their skill in battle, but it is essential to dependable railway performance. Let the railroads build the cars and locomotives and obtain the rail and other materials which they need to maintain their capacity in the emergency and their continued performance is assured. Some of this material and equipment being constructed would then also be available to the military forces if later developments should prove that it is needed more urgently for military uses.

Deny the railroads the material they need and harass them with increasing refinements in the remote supervision over railway material and failure begins, gradually and imperceptibly at first, and then with accelerated speed until the structure collapses as suddenly as a river bank that has been undermined.

Material and Manpower

It should not be overlooked, moreover, that track laid with new rail requires only one-fourth of the maintenance of old track and permits the release of old rail for other repairs or for scrap, and that new equipment requires less material and fewer men to keep it in condition for severe service than equipment that was built in War I; also that prolonged frustration in material procurement impairs the spirit of the men who require the material. Failure to furnish the railroads material sufficient to maintain their capacity thus also intensifies the manpower shortage, destroys morale, and reduces the quantity of raw materials that can be returned to the furnaces to produce essential military and civilian needs.

The frequency with which dispatches from battle fronts announce the bombing of railway trains, depots and other transportation facilities of the enemy demonstrates the importance given to railroad operation by military forces, but to what profit are enemy railroads destroyed if the railroads fail on the home front. At present, it is material and equipment that railroads need, and praise from Washington from now on will be less potent that fails to carry with it positive assurances of material aid. In this position, railway procurement forces are not unpatriotic but simply alive to the fact that their first job in this war is to keep the railroads going.

Acclaim for a Job Well Done

(Continued from page 135)

formulation of plans for their adequate and orderly distribution. The successful drive for the collection of scrap materials on our railroads has been greatly aided by the methods of salvaging and handling scrap that have been developed by the Purchases and Stores departments over the years.

In any review, however brief, mention should be made also of the splendid, helpful work of the suppliers and manufacturers of railroad material. They have been confronted with tremendous difficulties because of scarcities of materials and the confusion necessarily attendant on concentrating a multitude of transactions in Washington. There have been shortages, and serious ones, but they have been due to conditions beyond their control, and their record of performance is one in which they may well take pride and we are grateful to them.

The task of the Purchases and Stores departments has been exceedingly difficult and complicated and as I have watched their performance I have marveled at their accomplishment. There is no let-up in sight for them, but they have demonstrated that the job is in good hands and all that is humanly possible as a result of intelligent thought, resourcefulness, planning and good old-fashioned hard work will be done.

Six Roads to Victory

(Continued from page 136)

such items as journal bearings, signal apparatus, air brakes, etc., and so has the consumption of rubber, nickel, brass, tin and zinc. Efforts should and will be made to further decrease the consumption of all critical materials so far as consistent.

This is not only a patriotic duty, but also a real contribution to the war effort.

6. Continue an active scrap campaign. Keep the properties free from scrap. Ship it to market as soon as it is accumulated and classified. Enormous quantities have thus far been shipped by the railroads to mills. More and more will have to go to market so that the mills can convert it into badly-needed critical materials. In this connection, it is interesting to note that for every five tons of new steel that the railroads use, they have returned four tons of iron and steel scrap to the mills.

The purchasing and stores officers, whose primary duties are the procurement and distribution of materials and supplies, have been and are faced with a difficult task. Even in normal times it is not an easy matter to maintain a balanced inventory to give adequate service to various departments. War conditions have complicated the railway supply problem. Supply officers recognize, of course, the necessity for certain materials essential to the national defense program being placed under allocation and priorities, but as the war goes on and allocation control becomes tighter, we anticipate more difficulties in obtaining materials in sufficient quantities to meet the demands. There is also evidence that the volume of traffic has not as yet reached its peak. This means greater wear and tear on equipment and on structures and track and, therefore, a greater demand for maintenance materials. We have every reason to feel that the proper authorities in Washington can and will continue to provide the necessary materials to meet railroads' wartime needs.



Working Stocks at the General Store of the Rock Island at Silvis, Ill.

Railway Inventories Not Excessive

Unbalanced conditions of working stocks not safe—Total lowest in nine months—Government rules too severe—Rails and ties vanishing

RAILROADS owe their uninterrupted operations thus far during the war largely to the possession and efficient distribution of adequate working stocks, but they are now in the uncomfortable position of appearing to have an abundance of material and of being penalized in obtaining additional supplies because of it, when, in fact, they are badly in need of many basic materials. Although inventories in the aggregate are above pre-war levels, numerous classes of materials have not increased in proportion to their consumption, and the railroads have little or no stocks of many critical items.

The general trend has been downward for several months. The unbalanced condition of their material reserves is giving the carriers serious trouble in keeping equipment and track in repair, as well as in buying, and is giving supply forces much concern. At least one chief executive has been told to expect shortages of locomotives in a matter of weeks because of insufficient repair materials; while the condition of tie and lumber stocks was never so disturbing.

Working Stocks Declining

Materials balance of the Class I railroads on April 1, the latest month of record, totalled \$515,657,000 consisting of \$50,670,000 of fuel, \$20,472,000 of new and old rails, \$61,070,000 of ties, \$373,172,000 of other material, and about \$10,273,000 of scrap. While this was about \$9,298,000 more fuel than on April 1, 1942, it

comprised about \$3,263,000 less rail, \$5,767,000 fewer ties, and a \$4,627,000 smaller stock of other materials. Aggregate stocks of other materials for maintenance and repair declined \$21,428,000, or about 5.5 per cent, since their peak last August; while rail and tie stocks, with the exception of one or two recent months, were never as low as at present, and are only half as large as in 1929 and 1930. Thirty of 61 Class I railroads reported smaller stocks of other materials on May 1 this year than on May 1 last year, and 33 roads reported smaller working stocks of other materials than on August 1 last year, when average inventories of other materials were highest.

Misinformation Hampers Operations

Like many other aspects of railway operation, railway inventories are the subject of much misinformation and misunderstanding which interfere with their upkeep. Unlike the inventories of many businesses and industries, which had been ignored or manipulated at will previous to the war, railway inventories are subject to accounting rules prescribed by the Interstate Commerce Commission and have been openly and continuously analyzed by railroads, with the result that authoritative details about them have always been readily available. This fact and the greater prominence given to the details than to the physical inventories of other enterprises have inclined some people to single out railway inventories for criticism, although the less prominently considered

fields could doubtless have been examined with more profit and with less risk to the war effort.

Differ from Manufacturing

Figures representing railway inventories are not to be compared with the inventories of other businesses without recognition that railway totals, as commonly considered, represent inventories of many roads lumped together only for statistical purposes instead of the inventory of one company, as is often the case when other inventories are considered. If railway totals were compared to an all-industry or an all-warehouse or an all-chain store or an all-Army and all-Navy stores total, for example, their size would astonish nobody.

An inventory to a railroad, moreover, is not just a lot of unsold merchandise that is left over after the Christmas shopping, or merchandise, like butter and eggs and whiskey, that has been bought on a rising tide of prices for resale at a handsome profit. Neither is it merchandise that is locked up in a warehouse and marked "do not touch"; nor is it all one kind of material or all new material or all scarce material or materials for a clearly defined and precisely timed manufacturing operation.

The railroad's inventory, instead, consists of its available stock of every conceivable kind and variety of unapplied material for every conceivable use at every conceivable place where material is stored and at any time of the day, month or year. It consists not only of new rail from the time it is received until it is laid, whether it lies in the rail yard or along the right of way, but, in most cases, also the rails which every railroad keeps at section headquarters to replace the rails that break in service, together with the rails that have been removed from one place for relaying elsewhere, and also the scrap rails that are undergoing sorting and other preparations for sale. It includes not only the new tie plates, bolts, switches, and other accessories, which are purchased for immediate use, but varieties of types of frogs and switches which must be kept long periods at strategic points to repair sudden damage. It includes hundreds of thousands of cross ties, switch ties, bridge ties, telegraph poles, bridge timber and varieties of lumber, which are being seasoned at various points, sometimes off-line or stored along the railroad, as a part of their preparation for use in special programs or routine track or building work.

Not All New Material

Likewise, it includes thousands of varieties of new iron and steel that are stored in orderly piles in store-rooms and material yards at scores of points for repairing cars and locomotives, and varieties of other standard articles and products for signals, telegraph stations, water stations, coaling stations, heating plants, passenger stations, and machine shops, together with tons of castings and forgings and machine parts which may lie in stock for years but must be ready in a matter of hours to replace a service failure. At least 20 per cent of the working stocks are standby materials, that is, materials required as an insurance against failures, and 90 per cent of them are required to protect maintenance operations.

Railroad stocks also include coal and fuel oil of various kinds and the paints, oils, chemicals, hardware, etc., required daily for operating trains, together with tons of supplies, perishable and durable, for offices, dining

cars, etc. The average road carries over 50,000 varieties of material in stock in half a dozen to a score of store-houses. The conception of a railway inventory as one big reservoir into which, and from which, flow the railroad's needs as though all materials, like drops of water, were identical or interchangeable is altogether too simple to be taken seriously in the daily supply operation of any carrier.

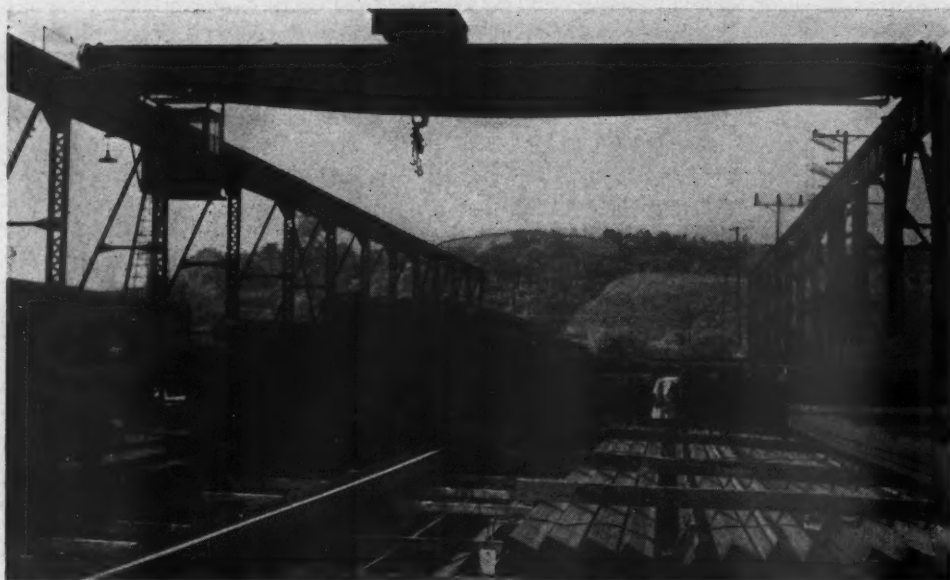
Previous to the outbreak of the present war and as long thereafter as possible, the railroads, like other heavy

Diminishing working stocks in the face of increasing traffic, and a declining supply of experienced labor, bespeak the need of more knowledge of railway requirements by those who deal with railway inventory facts; also more tolerance and vision in the formulation and administration of regulations which now hamstringing railway manufacturers and railroads in keeping the huge and vital machinery of domestic transport going. Tinkering with railway inventories while carriers are laboring under war and essential civilian traffic in one of the most serious periods in the country's history may be an effective way to wreck the railroads, but not to win the war.

industries, foreseeing the possibility of a scarcity of material essential to their operation, increased their purchases of common materials by substantial amounts until the unexpectedly large and ever mounting demands for war materials for this and other countries forced the Government to regulate the production and distribution of scarce materials. While most railroads and railway supply manufacturers acquired more materials of some kinds than they were able to use promptly, especially after the Government arbitrarily stopped many equipment building and other programs of work for which material was in large part already on hand, and also stopped numerous of its own defense projects for which large non-interchangeable stocks of track materials were acquired by some railroads, the general increase in railway inventories, on the whole, was consistent with the increases in railway operation and the increased difficulty of material procurement. Much of the increase was in coal, which is 10 per cent of the inventory and which the railroads were requested to store to relieve coal production and transportation. Also, some of the increase in the dollar volume of other stores merely reflects increases in material costs—for illustration, lumber costs having increased 60 per cent since 1939.

Below Level of War I

Dollar for dollar, the over-all inventory total of all the railroads at the beginning of 1943 was \$14,000,000 less than in 1917, \$142,000,000 less than in 1918, and \$257,000,000 less than in 1920 (the year following War I when the railroads were returned to their owners by the Government); and the total balances on January 1 this year were lower than in any year from 1917 to 1928, inclusive, in spite of the fact that the traffic being handled (and the corresponding wear and tear) was greater than in any of those years. Current balances



Inventory for Freight Car Work on the Milwaukee

average smaller in relation to operating expenses or revenues than in almost any year of record, with the exception of 1940. Railway inventory trends in the last 30 years would never suggest that the country was now at war. Yet, the railroads would be in more serious jeopardy at this time than they now are if they had not had the foresight in 1939 and 1940 to build their working stocks up to war strength.

At present, railway purchases and the upkeep of inventories are complicated by violent changes in the production and distribution that naturally occur in boom times. They are also contingent upon the preparation of detailed applications to Washington for authority to purchase the required materials and appliances. Each railroad must show in pounds, tons or dollars the amount of each article or class of material which it will require during a three-month period for maintenance alone, for heavy repairs to freight cars alone and for heavy repairs to locomotives alone, how much of each material or class of material was on hand at all points 180 days previous and also how many locomotives will receive each class of repairs. Each railroad is told how much of each class of material it may purchase each month during the period, with the usual statutory penalties for violations of regulations.

Since April 1, the railroads are also bound by a 60-day inventory law which reads as follows: "No user of controlled materials shall, after April 1, accept delivery of any item of controlled material if his inventory of such item is or will be by virtue of such acceptance become greater than the quantity of such items he will be required by his current practice to put into use during the succeeding 60-day period for production, construction, operating supplies or maintenance or repairs in authorized operations." The regulation contains a provision for fixing longer or shorter periods or otherwise varying the inventory limit, but always at the discretion of the War Production Board. The only universal exception known to have been made in this regulation for the benefit of the railroads to date is contained in a ruling issued May 3, permitting railroads to maintain materials for emergency repairs to the extent authorized under Preference Rating Order P-142 governing the purchase of maintenance and operating supplies. In the case of ties and timber, it is impossible for a railroad to operate on a strictly 60-day inventory if timbers are to

be seasoned and properly handled in order to obtain maximum life from them. While it appears that this regulation is being winked at with increasing recognition of its unworkability in railway operation, this does not change the law.

Controls Burdensome

The railroads are fully aware of the need of inventory control to assure the orderly progress of the war and the orderly conduct of essential civilian activities. They are following required procedures in every way possible but with difficulty because of the extreme detail of some of the regulations and their interference with normal railway procedures. There is no point in this connection to mention that business in wartime can not be conducted "as usual" for the railway business is decidedly unusual in that it is so much larger. Failure to comply fully with the regulations is prejudicial. Yet quantities on hand mean nothing with some materials and, as often as not, are misleading and futile where the inventory of a class is used to measure the requirements of individual items in the class; or where 60-day measures are applied to items which may take months to make and deliver; or to cross ties which take weeks to produce under the best conditions, months to season, and may all be used in a few weeks; or to materials for emergencies which can not be anticipated but require action, war or no war, without waiting on parliamentary procedure or investigation.

While the War Production Board restricts and allocates, it does not guarantee delivery on schedule; and deliveries of new materials are uncertain. Under the regulations, moreover, a supply manufacturer may not ship in one month materials which are scheduled for delivery in a succeeding month, even though the shipment is urgent and the material is available, and many manufacturers may not carry any stock of some of the tools and materials required by railroads. Time after time war agency men have won praise for their assistance in guiding railway representatives through the labyrinthian channels of material regulation and for their effective aid in emergencies especially with materials for maintenance and repair, but the frequency with which railroads file one or more supplemental applications to obtain authority to purchase materials which was de-



clined them in original applications does not simplify their problem of keeping adequate working stocks.

Recently, this country was shocked to learn of unprecedented floods along the Mississippi river and its tributaries which destroyed millions of acres of growing crops and paralyzed transportation. In some areas, it was the worst flood in 100 years. Railroad after railroad was washed out and thousands of tons of ballast and carloads of lumber, piling and other materials from scores of railway stores were rushed to the work to repair the damage and restore service. One railroad shipped timbers, planks, and carloads of piling ranging from 24 ft. to 45 ft. in length.

Flood Lessons

Another railroad required every pile cap it could find on its own and neighboring roads to repair the flood damage. Still another road had to obtain from its material yards and ship on short notice 10,250 lin. ft. of piling and 85,000 ft. b. m. of creosoted bridge stringers, caps, bracing, etc. This material would not only not have been available in time if it had not been on hand when the floods came, but its purchase probably not have been allowed under present regulations if it had been requested under normal circumstances. Based on present schedules of deliveries, one railroad reported that it would have required from 60 to 90 days to obtain delivery of the stringers and caps, and this does not take into consideration the four to six months required for seasoning before treating, although the smaller timbers could probably have been obtained in 45 days and seasoned in 90 days. The same is true of the piling.

Another road shipped 583 piles, 233,000 ft. b. m. of bridge stringers, caps and other timbers, 4,300 bridge bolts, 525 drift bolts, 2,800 O. G. washers and 800 packers from its material yards and bought 470 additional piles and 79,000 additional feet of lumber for its flood work. If the bulk of this material had not been on hand, this road would have been in serious difficulty as it would

have required from 60 to 90 days to obtain it; and the railroad is now faced with the problem of replenishing these stocks to protect its current work. These are examples of incidents which are not uncommon in railway operation and which the railroads must be prepared to meet instantly. Routine maintenance itself is full of uncertainties for the supply officer.

Tinkering Invites Trouble

At this moment, railroads are getting car wheels, brake shoes, and reinforcing steel, but are short of billets, axles and small tools. They are also short of alloy steels, welding rods and electrodes, bridge timber and lumber, ties, new rails and track fixtures; also insulated wire cable, lantern batteries, steel wheels, seamless steel tubing, track tools, and journal boxes. Rivets are slow. One western railroad that uses 600,000 grain doors a year has only 150,000 in stock at present and is succeeding in obtaining only 5,000 new doors a week with the grain shipping season immediately at hand. A supplier could not accept an order for 50,000 gallons of paint. These are only examples of material not being obtained by the carriers in sufficient quantities for present essential needs. As one road reports, the items of material in acute need are "too numerous to mention."

Diminishing working stocks in the face of increasing traffic and a declining supply of experienced labor for supply and other work bespeak the need of more knowledge of railroad requirements by those who deal with inventory facts; also more tolerance and vision in the formulation and administration of the confusion of regulations which now hamstring manufacturers of railway maintenance materials and the railroads in keeping the huge and vital machinery of domestic transport going. Tinkering with railway inventories while carriers are laboring under war and essential civilian traffic in one of the most serious periods in the country's history may be an effective way to wreck the railroads but not the way to win the war.

Handling 60 Pieces of
18 ft. Plank in One
Lift on the Milwaukee





General Committee—Div. VI—Purchases and Stores, A.A.R., at Chicago, April 29, 1943

Left to Right Seated—W. J. Farrell, executive vice chairman; L. P. Krampf (chairman), supply agent (M. P.); E. J. Lamneck (vice chairman), general purchasing agent (Penna); W. W. Kelly, general purchasing agent (A. T. & S. F.); R. D. Long, general purchasing agent (C. B. & Q.); J. C. Kirk, assistant purchasing agent (C. R. I. & P.). Standing—E. S. Jamieson, assistant general purchasing agent (U. P.), representing E. L. Fries, general purchasing agent; C. H. Murrin, general storekeeper (L. & N.); G. M. Betterton, general purchasing agent (S. P.); H. E. Warren, manager purchases and stores (G. M. & O.); G. O. Beale, chief purchasing and stores officer (C. & O.); E. W. Walther, assistant purchasing agent (B. & O.); C. B. Neubauer, assistant to vice president (Sou.); and O. A. Donagan, general storekeeper (B. & M.).

Procurement Patterns and People

Eastman perfects ODT organization—Relations with WPB clarified—Purchases and stores division, A. A. R., tackles bottlenecks in war laws

SCARCITY of materials and the control over their production, apportionment, movement and cost by the War Production Board and the Office of Price Administration, and also the increased material requirements of the railroads and other incidents of the war, have given a new importance to the supply services of the railroads and to the way in which they and railway manufacturers are meeting the new conditions and problems of material procurement. Notwithstanding the difficulty of getting materials and the authority of WPB over them, the railroads are still privately managed as before the war and must ascertain their own needs and purchase and pay for the materials and equipment they are permitted to obtain, and must even assist, wherever possible, in the formulation, revision and administration of the regulations to which they are subject. They and the railway supply manufacturers have thus much to do singly and together, formally and informally, in material procurement, and the principal reason why they are doing so much in this war is because, all in all, their own work in material procurement has been energetically and consistently performed.

In the Office of Defense Transportation, first of all, the railroads have an intelligent overseer and a staunch

advocate in material procurement. Created by executive order on December 18, 1941, this organization has "the function of assuring maximum utilization of all domestic transportation facilities for the successful prosecution of the war and the responsibility, among other things, of determining the adequacy of existing transport facilities and recommending to WPB the allocation of additional material and equipment when necessary."

When the Controlled Materials Plan was inaugurated within WPB this year as a substitute for previous plans for distributing critical materials among consumers, ODT was appointed a claimant agency for all material for domestic transport. Other claimants are the War Department, the Navy, the Maritime Commission, the Office of Lend-Lease Administration, the Board of Economic Warfare, the Aircraft Resources Control Office, the Office of Civilian Requirements, the Facilities Bureau, the Canadian division, the Food Administration, the Petroleum Administrator for War, the Office of Rubber Director, the Office of War Utilities, and the National Housing Agency—15 in all. Each claimant is responsible for preparing programs and determining the over-all requirements of material for its group of



purchasers, has its own representative on the Requirements committee of WPB which apportions the available supply of critical materials, and is the spokesman in WPB for the consumers in its field of authority. Previously, ODT could only submit its programs for the railroads to the Civilian branch of WPB, had no direct representation on the Requirements committee, and could not examine and debate the demands of other consumers, including the military departments. More recently, ODT's position in representing the railroads was further implemented by an executive order making its director, Joseph B. Eastman, a vice-chairman of WPB.

The Materials Division

When the Controlled Materials Plan was promulgated, a Division of Material and Equipment Requirements was set up in ODT. This division acts as the over-all coordinating group for the various claimant divisions of ODT, such as the railroads, buses, water carriers and trucks. Preliminary to this division's work on materials, applications from the railroads for railroad maintenance of way and construction projects are sent to the Fixed Properties section (ways and structures) of the Division of Railway Transport of ODT. Here they are reviewed by a representative of this section and a representative of the Transportation Equipment division of WPB. If the project involves less than \$10,000, it is settled by these representatives. If it involves expenditures of \$10,000 to \$100,000, it goes to the Project Analysis branch of WPB. If the project is over \$100,000 in value, it must be finally approved by the Non-Industrial Facilities committee of WPB after being approved by ODT and the Transportation Equipment division of WPB.

Applications of the railroads for rail are made directly to the Association of American Railroads and are examined by an engineering committee of the railroads. After the railroad committee has analyzed the railroads' requests, it makes a recommendation to the Director of the Division of Railway Transport, ODT, who makes a final allocation to the various railroads. This allocation is then transmitted to the Transportation Equipment division of WPB which issues the authority to purchase the rail.

Locomotives and cars are handled similarly to rail except that no railroad committee passes upon the carriers' requests. The allocations are made directly by the Division of Railway Transport and transmitted to the Transportation Equipment division of WPB, which issues each railroad its authority to place orders with the locomotive builders. The determination of the types of equipment to be constructed is made by the Division of Railway Transport in conjunction with the A. A. R.

The general allocation of materials must be made by the War Production Board, however, before rail and equipment and project programs are concluded by ODT. After the various transportation companies have transmitted their requests for materials for each quarter of the year to their divisions in ODT (the railroads submitting requests to the Division of Railway Transport), these requests are compiled and analyzed by the Division of Materials and Equipment of ODT. They are then transmitted to WPB by the Deputy Director of ODT who is a member of the Requirements committee of WPB. This committee is the final source which determines the allocations which the transportation industry receives on a quarterly basis. After the determination

is made by the Requirements committee of WPB, the materials are then apportioned among the different transportation groups, including the railroads, by a Materials committee of ODT, consisting of the Director of the Materials and Equipment division of ODT and the material officers of each transportation group in ODT.

The transportation Equipment division of WPB acts in an advisory capacity to ODT's handling of the material problem and determines for ODT the various

Railroads are still privately managed and must ascertain their own needs and purchase and pay for the materials and equipment they are permitted to obtain. They and the railway manufacturers have thus much to do singly and together, formally and informally, in material procurement. A principal reason why the railroads are doing so much in this war is because, all in all, their own work in material procurement has been performed energetically and consistently.

amounts of materials which are needed to build a required number of units of equipment. In the case of locomotives, ODT determines how many locomotives may be built from the amount of material allocated by the Requirements committee of WPB. The Transportation Equipment branch of WPB then furnishes the breakdown of materials needed in this construction. It also acts with ODT, as mentioned previously, in passing upon construction projects, and it has full control of all the maintenance and replacement materials under the so-called MRO plan after the Requirements committee of WPB makes the over-all allocation for transportation and ODT decides how much of it should be apportioned to railroads in the aggregate. The ODT takes no other part in this last phase of the transportation equipment problem. Thus, the only information that the Transportation Equipment branch furnishes ODT is a breakdown of the materials needed for various types of equipment or projects, but it has nothing to do with the allocation of materials or equipment as the system is now working.

Who's Who in ODT

The railway material and equipment organization of ODT includes Gen. C. D. Young, deputy director of ODT and a member of the Requirements committee of WPB. He was formerly vice-president of purchases and stores, Pennsylvania. V. V. Boatner is director of the Division of Railway Transport. The Division of Materials and Equipment consists of H. H. Kelly (a mechanical engineer previously employed in the Bureau of Motor Carriers, I. C. C.), directors; A. L. Sorenson (formerly manager of stores, Erie); Carol Brown (with the staff of the Federal Co-Ordinator of Transportation in 1936), and A. B. Cole (formerly of the engineering department of General Motors, Inc.). The organization also includes E. R. Hauer (formerly assistant chief of motive power, C. & O.), who is in charge of locomotives and cars in the Division of Railway Transport; and Robert Groover (formerly assistant chief engineer, A. C. L.), who is associate director of the Division of Railway Transport in charge of the Ways and Structures

section of Controlled Materials and the railway engineering committee on rail. He is assisted by Stephen Shoup, assistant deputy director of the Controlled Materials section (formerly on the general manager's staff of the K. C. S.). Clarence W. Sooby (K. C. S.) works closely with the Transportation Equipment branch of WPB in handling construction projects.

The engineering committee on rail consists of F. L. Thompson, retired vice-president and chief engineer (I. C.); G. W. Harris, chief engineer (A., T. & S. F.); W. H. Penfield, chief engineer (C., M., St. P. & P.); L. Yeager, assistant chief (N. P.); W. H. Kirkbride, chief engineer (S. P.); C. J. Geyer, general manager (C. & O.); C. H. Blackman, chief engineer (L. & N.); J. B. Akers, assistant chief engineer (Southern); W. D. Faucett, chief engineer (Seaboard); Phillip Petri, chief engineer, maintenance (B. & O.); J. C. Patterson, chief engineer, maintenance (Erie); S. E. Armstrong, engineer, maintenance of way (N. Y. C.); E. E. Oviatt, chief engineer (N. Y., N. H. & H.), and J. L. Gressitt, assistant chief engineer, maintenance (Penna.).

The Non-Industrial Facilities committee of WPB consists of Admiral Ralph Whitman, U. S. Navy, chairman; Lt. Col. H. B. Boynton, U. S. Army; E. R. Bennett of the Facilities branch of WPB, and E. D. Line of the Maritime Commission. Stephen Shoup, deputy associate director of the Division of Railway Transport of ODT in charge of the Ways and Structures section of Controlled Materials, attends the meetings of this committee in an advisory capacity to present any information on railroad construction projects which the committee desires.

In Joseph B. Eastman, director of ODT, the railroads have had, from the beginning, a vigorous and consistent advocate in public utterances and before regulatory bodies of liberal allowances of materials and equipment for the railroads, often without unified support from the railroads themselves. General Young is especially recognized for his intimate knowledge of railroad procedure and for his wide acquaintance with military men and procedure and for his initiative and aggressiveness in originating and pressing needed reform. The other men in ODT in charge of materials for railroads are also men of experience and initiative in railway operation.

The ODT is available to the carriers for expediting projects or equipment. The Ways and Structures section of Controlled Materials of the Division of Railway Transport assists in expediting the clearance of railroad construction projects of all kinds and the Mechanical division of the Division of Railway Transport assists in expediting the construction of locomotives and equipment. Inquiries regarding these two subjects, when addressed to these two divisions, are given prompt attention.

Material Men in WPB

The Transportation Equipment division of WPB consists of Andrew Stevenson, director; George M. Cornell (C. & O.), deputy director; J. J. Burnett (Cities Service Co.), assistant director; Charles H. Helsper (A., T. & S. F.), chief, program section; David P. Beach (Penna.), chief, way and structure section, assisted by Edward L. Hoopes (Penna.), technical engineer; Walter H. Allen, track equipment unit; O. F. Dalstrom (C. & N. W.), bridge unit; Eugene Moore (I. C. C.), signal unit; Henry D. Stowe (Penna.), project unit; Edward Duer, material unit; David W.

Odiorne (N. Y. C.), chief, rolling stock section, assisted by Lester N. Selig (General American), consultant; S. F. Udstad (American Car and Foundry), principal engineer; J. D. Driscoll (N. Y. C.), material unit; J. C. Angsten (Pullman Standard Car Co.), new equipment unit; W. C. Ryan (Ryan Car Co.), specialties unit; C. A. Jordan (N. Y. C. & St. L.), repair unit; C. H. Creasser (Indianapolis Union), chief, motive power section, assisted by Victor Rennix (Baldwin Locomotive Works), assistant chief; E. J. Harley (Baldwin Locomotive Works), industrial specialist; L. F. Malcolm, Jr. (N. Y. C.), materials unit; Matlock K. Tate (Lima Locomotive Works), large locomotive unit; J. A. Schoch (Westinghouse Electric Co.), industrial locomotive unit; D. T. Packard (Franklin Railway Supply Co.), specialties unit; John W. Small (ex. C. & O.), repair unit; Edward W. Brennan (C. G. W.); Edward S. Pardoe (Capital Transit Co.), chief, bus and electric railway section, assisted by R. W. Caswell (Public Service Co-ordinated Transportation Co.), assistant chief; and David A. DePue (Kysor Heater Co.), material unit.

The Purchases and Stores Division

In the A. A. R., which is strictly a railroad association, material procurement problems of the railroads are the prime interest of Division VI—Purchases and Stores, functioning independently or in collaboration with the Engineering and Mechanical sections of the association under the general direction of C. H. Buford, vice-president of maintenance and operations. The Division was created largely out of the experiences of the railroads in War I which demonstrated the need of more uniform materials, standard practices, more specialization in supply organization, and a freer exchange of ideas and information among supply service personnel. Until recently, the Division almost always arranged annual meetings at which railway purchasing and stores officers would review reports prepared by committees of railway supply officers and employees for the information of the railroads on all phases of railway procurement work, including simplification, standardization of materials, and reclamation. It had no authority to insist upon the adoption of its recommendations and all railroads did not adopt them, but the Division's activities familiarized each railroad supply department with the developments of interest to all.

War conditions have seriously curtailed or rendered unnecessary many of the usual activities of the Division, and not only have the general meetings been postponed indefinitely, but the Division decided to present only two formal committee reports this year for the information of its membership—one on scrap handling and the other on reclamation. While the P. and S. division has thus been relatively inactive externally, it has been very active internally. Emphasis has been shifted from subjects of general interest and discussions of broad principles to the consideration of purchasing and stores problems and situations incident to the war which call for prompt attention and action. The Division now endeavors to function wherever group action is desired in current situations, either in deciding upon a course of action in material procurement or inter-railway relations, or wherever it can be helpful to the membership in discussing their individual or joint problems with the war agencies; also by keeping the railroad supply officers informed of significant developments in the regulations over materials

and prices, by assisting in gathering information desired by ODT and other Government offices and promoting needed revisions in regulations or other conditions interfering with material procurement. Its activities are now centered in Washington, D. C., where W. J. Farrell, executive vice-chairman, with a staff of assistants, including F. B. Robbins (C. & O.) previously chief of the maintenance and supply equipment section of the Transportation Equipment division of WPB, is now devoting about 95 per cent of his time to the immediate problems of railroads and supply manufacturers in procurement, and only about 5 per cent on association work as it was conducted before the war.

The personnel of subject committees of the Division has also been kept reasonably intact so that the committees can be utilized whenever situations arise which advise or require it. They include, besides committees on scrap handling, reclamation and forest products, committees on material classification, inventories, manufac-

O.). The members are all close to Washington for handling emergency situations.

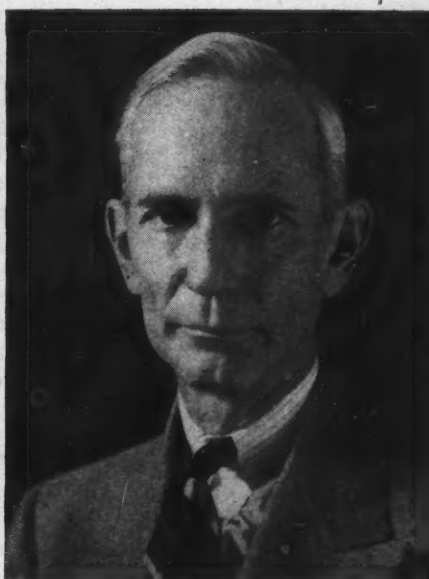
The Forest Products committee has been unusually active, discussing with representatives of the war agencies the problems confronting railroads in obtaining ties and stress timber and in obtaining adjustments in regulations by WPB and OPA and in assisting the war agencies, whenever possible, in developing the necessary facts relating to the use and requirements of forest products by carriers. Recently, a representative was sent to the West Coast to confer with the Central Purchasing Agency about the acute conditions facing the railroads in obtaining stress timber and in obtaining relief from a situation that has been almost unprecedented in railroad history.

Gen. C. D. Young, deputy director, ODT, and A. L. Sorensen, associate director of the Division of Materials and Equipment, ODT, are past-chairmen of the Purchases and Stores division, and practically all requests

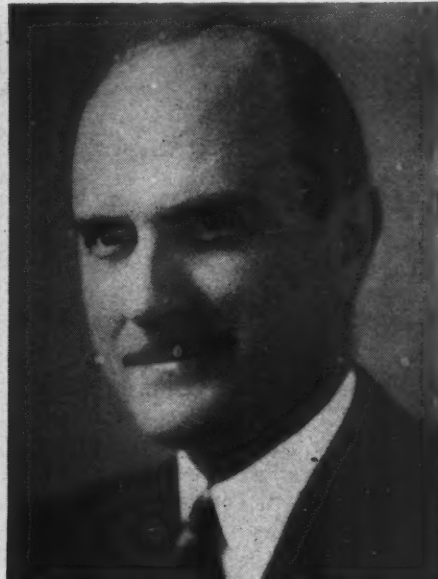
Key Men in ODT on Railway Material Requirements



V. V. Boatner



Gen. C. D. Young



H. H. Kelly

turing in railroad shops, fuel, purchasing practices, stationery and printing, fire prevention and safety, material handling, simplification and standardization, terminal storekeeping, commissary supplies, maintenance of way and construction materials, store department records, loss and damage, and diesel materials; while regional organizations are maintained to discuss the special problems in each territory.

Emergency Committees

The Division maintains a special purchasing committee, consisting of the purchasing agents of nine railroads, to consider special problems in purchasing; while an emergency committee of the general committee, consisting of E. J. Lamneck, general purchasing agent (Penna.); F. S. Austin, purchasing agent (N. Y. C.); C. B. Neubauer, assistant to vice-president (Southern); G. E. Towner, general purchasing agent (W. M.); and E. W. Walther, assistant purchasing agent (B. &

for information desired by ODT in estimating the needs of the carriers for materials or the progress on its delivery are obtained through the A. A. R. and Division VI. The Division also obtains copies of requests made upon WPB for quarterly requirements of maintenance material, as well as copies of numerous other records which the railroads are required to furnish the war agencies. P. A. Holler (Penna.), a member of the Division, is a special assistant to the vice-chairman, A. A. R., on equipment problems.

Last year, the Division, collaborating with the Engineering and Mechanical divisions, A. A. R., prepared a manual of approved reclamation practices, consisting of practices which had been adopted by committees in previous years, and printed 6,000 copies for the railroads. This year, the committee on scrap handling and reclamation enumerated additional methods of reclaiming materials which had already been approved by other sections of the A. A. R., and enumerated suggestions which are now awaiting the approval of other sections. The same

committees have reported the results of conferences with representatives of WPB and OPA, leading to revision of the terms of numerous orders relating to scrap and to effectuating a more complete adoption by railroads of A. A. R. specifications for grading and selling discarded material.

Last year, the Division was represented on A. A. R. emergency committees on rubber and non-ferrous metals, and, recently, a special committee of the Division and the Dining Car Superintendents Association, in charge of Harry Hansen, superintendent dining cars (Union Pacific) and working through the executive vice-chairman of the Division, was formed to clarify all rules relating to the purchase and use of food and other rationed materials, and to seek a relaxation of the regulations over food as they apply to the maintenance of railroad restaurants and commissary service. WPB utilizes the facilities of Division VI in adjusting regulations to railroad conditions, and is now inviting suggestions from the Purchases and Stores division for making revisions in the latest procedures of purchasing under the CMP plan. The Division thus continues to occupy a useful, though not always a clearly defined, place in the wartime railway procurement picture.

Other members of the General Committee of the Division besides those on the Emergency Committee consist of L. P. Krampf, supply agent (M. P.); G. O. Beale, chief purchasing and stores officer (C. & O.); G. M. Betterton, general purchasing agent (S. P.); O. A. Donagan, general storekeeper (B. & M.); E. L. Fries, general purchasing agent (U. P.); W. W. Kelly, general purchasing agent (A., T. & S. F.); J. C. Kirk, assistant purchasing agent (C., R. I. & P.); R. D. Long, general purchasing agent (C., B. & Q.); C. H. Murrin, general storekeeper (L. & N.); and H. E. Warren, manager purchases and stores (G. M. & O.).

Industry Committees a Factor

Industry advisory committees of WPB are also of interest in railway procurement. These committees are organized by WPB to advise their respective divisions or sub-divisions in the study of the resources of the respective industries in formulating regulations and administrative procedures and to afford informal contacts between the Industry division of WPB and the industries affected. The WPB selects the personnel of the committees and their advice is not necessarily accepted by WPB. These committees have often been called to Washington merely to be told what to do. However, many of them are composed of executive officers of railroad companies and railway manufacturers, and as the material situation confronting the railroads becomes more acute, these committees, though continuing in an advisory capacity to WPB, should be in a position to prove even more useful than in the past in preventing and correcting conditions in the production and distribution of material which threaten the security of the entire railroad business.

The more important of these committees are as follows:

Railroad Industry Advisory Committee—J. F. Deasy (Penna.), George Brooke (Vgn.), A. T. Mercier (S. P.), J. B. Hill (L. & N.), O. H. Nance (Canton), C. A. Liddle (Pullman-Standard Car), W. E. Hedgcock (American Car & Foundry), C. W. Pidcock, Jr. (Ga. Nor.), J. F. MacEnulty (Pressed Steel Car), F. A. Livingston (Ralston Steel Car), A. W. Phelps

(Electro-Motive), T. M. Evans (H. K. Porter, Inc.), S. G. Down (Westinghouse Air Brake), W. B. Given, Jr. (American Brake Shoe & Foundry), Ralph Budd (C., B. & Q.), W. H. Harman (Baldwin Locomotive Works), W. C. Bower (N. Y. C.), F. J. Gavin (G. N.), E. J. Engel (A., T. & S. F.), E. E. Norris (Southern), V. C. Armstrong (Poor and Company, Inc.), F. B. Ernst (American Steel Foundries), A. A. Frank (Standard Railway Equipment), and C. P. Whitehead (General Steel Castings Co.).

Locomotive Industry Advisory Committee—J. L. Beven (I. C.), C. E. Brinley (Baldwin Locomotive Works), G. H. Bucher (Westinghouse E. & M.), W. Chadwick (Davenport-Bessler), M. W. Clement (Penna.), J. E. Dixon (Lima Locomotive Works), P. B. Eiseman (Brookville Locomotive Co.), T. M. Evans (H. K. Porter, Inc.), D. W. Fraser (American Locomotive Co.), E. P. Holder (Vulcan Iron Works), W. J. Jenks (N. & W.), J. A. Root (Fate-Root-Heath Co.), Gerald Swope (General Electric), and D. S. Brookmeyer (Electro-Motive Corp.).

Producers of Large Steam Locomotives Segment—R. B. McColl (American Locomotive Co.), L. W. Metzger (Baldwin Locomotive Works), J. E. Dixon (Lima Locomotive Works), Warren Elsey (Penna.), and Clyde Cocke (N. & W.).

Producers of Small Steam Locomotives—W. Chadwick (Davenport Bessler Co.), T. M. Evans (H. K. Porter, Inc.), and E. P. Holder (Vulcan Iron Works).

Producers of Large Diesel Locomotives Segment—R. B. McColl (American Locomotive Co.), L. W. Metzger (Baldwin Locomotive Works), A. W. Phelps (Electro-Motive Corp.), G. W. Wilson (General Electric), and T. C. Wurts (Westinghouse Electric & Mfg. Co.).

Producers of Small Diesel, Electric, Mechanical and Other Locomotives—F. H. Craton (General Electric), T. A. Wurts (Westinghouse Electric & Mfg. Co.), J. A. Root (Fate-Root-Heath Co.), J. Horky (Brookville Locomotive Co.), W. Chadwick (Davenport Bessler Co.), T. M. Evans (H. K. Porter, Inc.), and E. P. Holder (Vulcan Iron Works).

Railroad Car Builders' Industry Advisory Committee—W. N. Barker (Pullman-Standard Car), C. A. Becker (Dispatch Shop, Inc.), E. R. Buck (Wabash), E. P. Gangewere (Reading), K. C. Gardner (Greenville Steel Car), R. L. Gillispie (Bethlehem Steel), B. C. Hanna (Ralston Steel Car), G. H. Fleming (Pressed Steel Car), H. W. Jones (Penna.), LeRoy Kramer (General American Transportation), J. W. Leis (Magor Car Corp.), K. F. Nystrom (C., M., St. P. & P.), J. A. V. Scheckenbach (American Car & Foundry), and C. M. Wright (Mt. Vernon Car Mfg. Co.).

Railroad Specialty Steel Castings Industry Advisory Committee—F. B. Ernst (American Steel Foundries), G. T. Johnson (Buckeye Steel Castings), N. A. Sauer (Symington-Gould Corp.), and J. A. Slater (National Malleable & Steel Castings Co.).

Frog and Switch Industry Advisory Committee—T. E. Akers (Ramapo Ajax Corp.), J. E. Conley (Conley Frog & Switch Co.), L. E. Connelly (Cleveland Frog & Crossing Co.), R. G. Detmer (American Frog & Switch Co.), W. A. Enstrom (Pettibone-Mulliken Corp.), W. H. Friedline (Carnegie-Illinois Steel), R. L. Gillispie (Bethlehem Steel), W. H. Hartz (Morden Frog & Crossing Works), J. A. Krugler (Taylor Wharton Iron & Steel Co.), O. DeGray Vanderbilt, Jr. (Weir Kilby Corp.), and L. E. Weidman (Frog, Switch & Mfg. Co.).



The Southern Pacific Now Has 421 Women Replacements in Supply Work

Railway Supply Forces Are on the March

Purchasing and Stores men at work are big factors in keeping trains going—Excel in scrap drives and in bond buying—Many are in uniform—Machines save labor

ANY record of railway material procurement in wartime would be incomplete and a full understanding of current railway accomplishments in transportation would be impossible that ignored or touched only casually upon the work of the railroads' own supply departments, for it is these forces in offices and stores all over the country who physically handle the material and the details from the time the material is ordered until it is used, who keep the basic records necessary to estimating needs, and who must adjust themselves to countless situations that arise daily in keeping the carriers supplied with thousands of kinds and sizes of the materials they require.

In less troublesome years, the organization and problems of these departments were indicated in reports prepared by the Purchases and Stores division, A.A.R., which is composed entirely of men engaged in railway purchasing and stores work. It is partly because these forces are so constantly under the pressure of their daily work at present that no general meeting of the Division is being held this year, and the work of many committees has been halted. If the Division had held

a general meeting, however, it could have given a graphic account of the work its membership is doing, directly and indirectly, under the stress of war. For the most part, it is a plain record of many men in many places each performing the routine jobs assigned but with a new interest arising from the realization that material is necessary to the war. It is also a record with dramatic incidents where emergencies are met. These men have sons or associates on the oceans and battle fields, and they are scoring high in their purchase of war bonds.

Some railroads have separate and distinct purchasing and stores organizations, operating under a vice-president or chief purchasing officer who is directly responsible only to the chief executive of the carrier. On some roads, the stores department reports to the purchasing agent; on others, to the general manager or other operating officer. On several roads, the purchasing is divided, as where coal and equipment are handled separately from other materials. On still other roads, some store forces report to one department and other storekeepers to other departments. Some departments handle more de-



tail than others, depending upon their size, location and sources of supply and other considerations.

Buy, Ship and Produce Scrap

Basically, however, the work of different roads all follows similar patterns. It involves the purchase of all the materials and equipment the railroad needs in accordance with approved prices, specifications and other conditions of sale, shipment and delivery; the inspection and testing of materials at mill, mine or destination; the maintenance of adequate supplies of every item of material needed for maintenance and repairs or construction; proper facilities for the storage and handling of these supplies; systems of records for inventory control and accounting work; approved methods and facilities for delivering materials to users at their places of work or shipping them to remote places; also methods and facilities for collecting worn and discarded material, providing for its salvage in one form or another or for its disposal by sale or by converting it into other forms for use on the railroad.

In the course of this work, supply forces use warehouses ranging from small sheds, holding 50 or more classes of stock to protect the service at some remote location, to huge buildings of concrete, brick and steel, fitted with modern material-handling equipment and containing row-on-row of carefully labeled shelves and bins carrying thousands of varieties of material as well as acres of open areas where heavy materials are kept. They also operate highway and industrial trucks, including electric lift and fork trucks of all types and sizes for loading and unloading and transferring materials. So large is the quantity of supplies used that supply forces are among the railroads' largest shippers of freight. They are also among the largest and most important processors and producers of scrap for steel mills and foundries. They have not only had the job of keeping their own railroads supplied with material, but have been called upon to gather increased quantities of scrap to keep steel mills going, and also furnish usable rails, ties and other materials from their own stocks or from their tracks for the use of armed forces in this country and abroad. They have loaned some of their ablest men to the War Production Board and other war agencies, including the Army and the Navy, and have many stars in their flags representing employees in military service.

They Also Serve

The record of the supply services in wartime thus is not only the record of the purchasing agent and the stores manager and their more prominent assistants, but the record of order and requisition clerks in those departments; of inspectors who scour the country looking for additional ties or pieces of stress timber; of district, division and local storekeepers who direct operations at points where material is needed most; of the stores inspector who moves from one storage yard to another investigating special problems of supply and assisting in relieving tight situations; of the stockman in his office in the material yard, who watches every item of stock in his charge, prepares requisitions for its replenishment, and supervises all details of storekeeping within his section; of the store foreman and truckers who load and unload the cars. Likewise, the record is that of the men who examine, sort and prepare the scrap which every store accumulates and who operate torches or machines in reconditioning old material or convert-

ing scrap into some other form for use on the railroad. It extends to hundreds of women now filling positions previously held by men.

Few railway supply organization are as large as some of the departments of Government which regulate them, and very few can match the accommodations in office space and equipment of the average war worker in Washington. Many buildings, platforms, runways and machines are old and dilapidated, for the railway supply departments, as other departments of the railroads, experienced the privations of depression years. In all directions and places, however, these departments are beehives of activity.

Information has recently been gathered which affords interesting facts about these departments. The summary up to the present reveals that 33 railroads, operating 105,000 miles of line, maintain 525 store points in

Any record of railway material procurement in wartime would be incomplete and a full understanding of current railway accomplishment would be impossible that ignored or touched only casually upon the work of the railroads' own supply forces. It is these forces in offices and stores all over the country who physically handle the material and the details of its shipment, care and distribution. This work is a plain record of many men in many places each doing his job. It is a record of dramatic incidents where emergencies are met—of men, who have sons on the oceans and battle fields, and are scoring high in buying war bonds.

charge of store department attendants and employ 13,469 in purchasing and stores work, of which 957 are in the purchasing department, 11,097 in the stores department, and 1,415 are engaged in scrap handling and reclamation under the direction of the stores department. In addition, 2,697 employees of these departments, or 20 per cent of the number now employed, are in military service and 20 are attached to war agencies. Of the number employed, 1,122 are women who are doing work previously performed by men. Ninety-three per cent of the employees in purchasing departments, 85 per cent of the stores forces, and 86 per cent of the scrap and reclamation forces are participating in the company plan of buying war bonds. The storehouses of these railroads load outbound each day 848 cars, with an average of 27 tons per car; and the period from the time cars are received until their release averages 1.5 days.

The Atlanta & West Point, Georgia and Western Alabama lines have a stores force of 35 employees, with 3 employees in military service, and 91 per cent of the force is buying war bonds under the company plan.

The Atlantic Coast Line supply force totals 446, consisting of 67 in purchasing, 359 in stores and 20 in scrap handling and reclamation. In addition, 102 are in military service and 8 with war agencies, including 17 from the purchasing department, 81 from the stores and 12 from the scrap and reclamation force. It has 37 women doing supply work previously performed by men, and 100 per cent of the purchasing force are bond buyers. Fifteen stores load 7 cars outbound daily,

with an average of 20 tons per car and an average detention time of one day.

The Baltimore & Ohio has 1,260 employees in supply work, including 78 in purchasing, 1,102 in stores and 80 in scrap handling and reclamation; has 306 in military service and 4 in war agencies; 130 women replacing men; and loads 109 cars outbound daily from its 47 storehouses.

The Bangor & Aroostook, with 6 employees in purchasing, 31 in stores and 15 in reclamation, has a 100 per cent bond score in purchasing; and its 125 cars loaded outbound per month from 3 stores average one day detention.

The Central of Georgia has 18 employed in purchasing, 47 in stores and 26 in scrap handling, or a total force of 91, with 19 additional men in military service; has 12 women replacing men; a 100 per cent bond participation in purchasing; and loads an average of 37 tons per car outbound from its 6 stores, with an average detention per car of $1\frac{1}{4}$ days.

100 Per Cent Buy Bonds

The Chesapeake & Ohio has 452 in supply work, consisting of 53 on itself and the Nickel Plate and the Pere Marquette in purchasing, 374 in C. & O. stores and 25 in C. & O. scrap handling and reclamation. It has 65 in military service; 10 women replacing men; an 83 per cent score of bond buying in purchasing, 90 per cent in stores and 90 per cent in scrap and reclamation; and loads 23 cars outbound daily from 26 stores with a car detention average of one day. The New York, Chicago & St. Louis has 172 employees in stores and 14 in reclamation; 48 supply employees in military service; 8 women replacing men; a 90 per cent bond score in stores and scrap handling; and a 1.6 days car detention at 8 store points. The Pere Marquette supply force has 98 employees in stores and 12 in scrap and reclamation; 36 in military service; 5 women replacing men; a 100 per cent bond score in its reclamation plant; and 12 outbound cars per day from 4 store points carry 25 tons per car with an average car detention of 1.3 days.

The Chicago & Illinois Midland has 28 employees in purchasing and stores department work, 7 in military service, and a 100 per cent bond participation in stores and purchasing.



Women Are Doing Useful Work in Railway Storerooms

The Chicago, Milwaukee, St. Paul & Pacific supply force consists of 56 in purchasing and 835 in stores. There are 301 supply department employees in military service; 32 women holding men's jobs; a 100 per cent bond score in purchasing; and 52 cars are loaded outbound daily from 44 stores with an average detention of one day.

The Chicago, Rock Island & Pacific has a force of 323 in stores and 118 in scrap handling and reclamation, or a total of 441, excluding the purchasing department. It has 88 supply men in military service; 42 women in stores and reclamation work; has a bond score of 100 per cent; and loads 46 cars outbound daily from 19 stores with an average detention of 1.5 days.

The Delaware, Lackawanna & Western has 145 stores and scrap handling employees; 30 more in military service; a bond score of 88 per cent in stores and 100 per cent in scrap and reclamation; handles 475 cars per month outbound at 15 stores, each car averaging 30 tons and one day detention.

The Erie, with 26 stores, has 351 employees, counting 40 in purchasing, 271 in stores and 40 in scrap and reclamation; has 53 in military service and one in war agency work; 19 women replacing men; and handles 35 cars per day outbound with an average detention time of 1.6 days.

The Grand Trunk Western has a supply force of 172, counting 14 in purchasing, 137 in stores and 21 in scrap handling. It has 30 supply men in military duty; 8 women in place of men; a bond score of 90 per cent or over in purchasing and stores; and loads 20 cars outbound daily from 15 stores with an average of 40 tons per car and 2 days detention.

Release Cars Promptly

The Great Northern has 619 supply employees, counting 48 in purchasing and 571 in stores. It has 214 supply employees in military service; 59 women working in place of men; and handles 50 cars outbound per day from 24 stores with an average of 35 tons per car and an average detention of $1\frac{1}{2}$ days.

The Gulf, Mobile & Ohio has a supply force of 189, including 22 in purchasing, 132 in stores and 35 in scrap and reclamation. It has 26 supply employees in military service; 8 women doing men's work; a 98 per cent score in bond buying in all supply departments; and loads 25 tons per car outbound from its 9 stores and averages 1.4 days in car handling.

The Louisville & Nashville, with 18 stores in charge of storekeepers, has 601 employed, counting 56 in purchasing, 490 in stores and 55 in reclamation and scrap work; 91 supply employees in military service; a 90 per cent bond score; and loads 26 cars outbound from its stores per day containing from 20 to 25 tons per car and averaging one day detention.

The Missouri-Kansas-Texas has a force of 310, counting 27 in purchasing, 230 in stores and 53 in scrap and reclamation; 41 in military service; an 85 per cent bond score in purchasing and 100 per cent in stores and reclamation; and loads 18 cars per day outbound from its 8 stores with an average load of 27 tons and a detention of 1.7 days per car.

The New York Central lines—including the Boston & Albany, the Big Four and the Michigan Central, but exclusive of the Pittsburgh & Lake Erie—has 106 employees in purchasing, 2,098 in stores and 294 in reclamation, a total supply force of 2,498. It has 494 in military service, the purchasing department contributing 20, the stores 416 and reclamation 58. Two

more from the purchasing department are with war agencies. The number of women employed on work previously performed by men now total 212, consisting of 14 in the purchasing department, 163 in stores and 35 in reclamation. The bond score is 99 per cent in the purchasing department, 95 per cent in the stores department and 100 per cent in the reclamation plants. The 110 stores in charge of attendants load 203 cars outbound per day with the loads averaging 30 tons per car and detention averages 1.2 days.

The New York, Ontario & Western has a force of 58, consisting of 6 in purchasing, 42 in stores and 10 on scrap and reclamation; 10 supply employees in military service; 5 women replacing men; a 100 per cent bond score in purchasing; and keeps car detention down to 1½ days.

The Pittsburgh & Lake Erie has 14 stores; 304 employees, divided 13 to purchasing, 236 to stores and 55 to scrap and reclamation; 68 supply employees in military service; 16 women now holding men's jobs; a 100 per cent bond score in purchasing, 88 per cent in stores and 95 per cent in reclamation; and loads 15 outbound cars per day averaging 25 tons per car, and car detention time averages 1.5 days.

The Richmond, Fredericksburg & Potomac has 10 employees in purchasing and 49 in stores and 8 in military service.

The St. Louis-San Francisco has 29 purchasing employees, 228 stores and 144 scrap and reclamation employees, or a total force of 401. This road has 38 supply employees in military service; a bond record of 100 per cent in purchasing, 96 per cent in stores and 89 per cent in reclamation; and its 13 outbound cars per day from 18 stores average 30 tons per car.

The Southern has a supply force of 927, consisting of 82 in purchasing, 785 in stores and 60 in reclamation. It has 109 supply employees in military service and 2 in war agencies; 48 women replacing men; a 95 per cent bond record in stores; and the 74 cars loaded outbound per day from its 36 stores average 20 tons per car.

The Southern Pacific, Pacific system, including the Northwestern Pacific, accounts for 2,088 of the number in the supply forces of the railroads. Of this number, 98 are in purchasing, 1,776 in stores and 214 in reclamation. The number in military service totals 427, including 24 from the purchasing department, 340 from the stores department and 63 from the scrap and reclamation force. Women doing the work of men in this supply force now number 431, of which 29 are in the purchasing force, 306 in stores work and 96 in scrap and reclamation work. The bond buying score is 95 per cent in purchasing and 100 per cent in stores and reclamation. The 33 storehouses on the S. P. load 59 cars outbound daily with loads averaging 40 tons per car, while the N. W. P. stores average 35 tons per car.

The Texas & New Orleans has a supply force of 396 employees, including 21 in purchasing, 322 in stores and 53 in reclamation; has 62 supply department employees in military service; employs 13 women to fill vacancies created by men; reports a 100 per cent bond buying score in purchasing; and the 19 cars loaded outbound per day from its 8 storehouses average 40 tons per car, while the average car detention averages 2 days.

The Wabash supply force totals 273 employees, including 30 in purchasing, 185 in stores and 58 in reclamation, not counting 55 employees in military service; and the 325 cars loaded outbound per month from



Checking, Shipping, Loading and Hauling Are Among the Details of Railway Supply Work

its 11 stores average 20 tons per car and are never detained more than a day from the time they are received until they are released.

The Western Maryland purchasing department numbers 27, is represented in military service by 5 men, and has a 93 per cent score in bond buying.

Supply department officers in military service include the following:

R. F. Paulk, assistant storekeeper; G. H. Daniel, assistant storekeeper; A. H. Harriss, storekeeper; W. J. Harper, assistant storekeeper, and C. I. Cavanaugh, storekeeper, on the Atlantic Coast Line. The list includes Lt. Col. E. W. Peterson, formerly general storekeeper (Bangor & Aroostook), now with the Corps of Engineers; Maj. R. E. Hamilton, formerly supervisor of reclamation (C. & O.); Lt. L. J. Garner, formerly storekeeper (M-K-T); Capt. C. J. Sellens, formerly storekeeper (C. M. St. P. & P.), now with the 757th Railway Shop Battalion; Lt. Col. G. M. Jarvis, formerly division storekeeper (Southern); Maj. C. L. Wakeman, formerly general storekeeper (Wabash), now in overseas duty; Lt. W. E. Erickson, formerly buyer (G. N.), now in the Navy; and Capt. Roland Anderson, a former general store foreman (G. N.), now with the Army Engineers. The roster also includes Capt. H. H. Wittekind, formerly district material supervisor (S. P.), El Paso, Tex., now with the 727th Railway Operating Battalion in Africa; Lt. C. M. Sullivan, formerly storekeeper (S. P.) at Sacramento, Calif., now with the 754th Railway Operating Battalion in Iran; and Maj. F. F. DeLisle, formerly district storekeeper (N. Y. C.), Buffalo, N. Y., now with the 701st Engineer Headquarters, Railroad Regiment.

Manpower Shortage Grows

Railway supply departments were never so large as to permit employees to be idle without being seen, and after the experience of the depression years when railroad after railroad prematurely retired some of its older men to avoid having to lay off younger men, few railroads expanded their supply departments beyond what was absolutely essential prior to the war, with the result that most railroad supply organizations are now undermanned, and the pressure of work is terrific. The work of many purchasing organizations has been increased four-fold by the additional clerical work required in preparing forms and reports for different war agencies and in tracing manufacturers for material. One purchasing agent has given up trying to keep up with the changes in regulations. Storekeepers are trying to handle their work with too few experienced men in material yards and reclamation plants, and are faced with the additional problem of training women to fill vacancies created by male employees leaving for military service or better pay in defense plants.

The manpower situation is the most serious one facing the supply department of the Denver & Rio Grande Western, for example. The women are performing light work satisfactorily on this road, according to W. B. Hall, purchasing agent, some being employed as shop delivery messengers to transport materials and equipment in hand carts to shop departments, while others are beginning to exercise their seniority and are moving into the office detail handling Government reports and other stenographic work. While various roads are attempting to engage women in heavier duties, the supply officers of the Denver & Rio Grande Western have concluded that they cannot replace the men for such

heavy duties as unloading cars of heavy lumber, steel or bulky railway supplies. Their employment has been complicated by the necessity of providing special facilities for them in the shop districts.

No Loafing on Supply Front

J. L. Irish, general storekeeper of the Union Pacific, put the situation confronting storekeepers mildly in a statement, "We are working under considerable pressure at the present time with a very decided shortage of experienced and qualified employees." The purchasing force of the Great Northern is so short-handed, according to the purchasing agent, that it is working Saturday afternoons and Sundays. On the Illinois Central about 10 per cent of the stores' work is overtime. "No one who has not observed the daily work of purchasing and stores organizations at the present time can realize what these forces are up against," reports A. W. Munster, vice-president of the Boston & Maine. "Not only are we having overtime work, which is inefficiently carried on because of shortage of experienced men, but the combination of Government reports, shortage of locomotives and inefficiency in repair shops has put the supply organization in a position where it absolutely cannot do anything more than is definitely required to keep the railroad going." As a result of labor shortage, 70 per cent of the labor and store helper force of the New York, Chicago & St. Louis consists of boys of high school age who report for duty after school hours during the week and work full days on Saturdays, Sundays, holidays and during vacations.

"We are in a desperate situation for labor," reports A. S. McKelligon, general storekeeper of the Southern Pacific. "The main Southern Pacific stores at Sacramento, West Oakland, and Los Angeles, Calif., and Portland, Ore., are in the center of the heaviest war industry area there is in the country. This part of the country has never been much of an industrial center, being more agricultural, mining, etc., and the wages paid in these industries rob us of men who have been with us as long as 25 years. We are getting by with our material handling equipment, part time workers after regular hours, Sundays and holidays. These are mostly white collar workers, and in some instances we have been able to call on soldiers and sailors where they have short furloughs."

Over the Top in Scrap Drives

Day by day, however, the supply forces ply their trade and meet each new problem as it comes. Last year, all railroads appointed salvage committees and undertook with zeal to increase the production of iron and steel scrap. In most cases, the purchasing and stores department officers are the salvage directors, and in all cases supply forces played stellar roles in the scrap drives which the railroads launched. Their performance last year in tearing up old tracks and speedily releasing several thousand miles of relayer rail for army and navy construction and in producing additional tonnage of iron and steel scrap required to keep steel mills and foundries in production is one of the brightest pages in the record of the railroads' war effort. Scrap collection continues on the railroads and this year the work has been expanded to produce more non-ferrous metals. Their enterprise promoting simplification, substitution, reclamation and other forms of conserving material has been particularly noteworthy and will be discussed in a separate article.

Railroads Break Records in Conserving Material

Prove resourcefulness in reducing varieties and using substitutes to meet shortage of new supplies—New frontiers in reclamation

CONSERVATION, simplification and standardization, substitution and reclamation are familiar words in railway supply work, but they have been given a new ring by the difficulties which the railroads are experiencing in getting sufficient quantities of some kinds of materials and equipment since the war began and the impossibility of getting others, either because they are scarce or because their production and use has been stopped or restricted by the intent or operation of the war regulations.

At no time have the railroads relaxed their pressure to obtain the new materials and equipment they absolutely require if it is at all available, for safety is always a paramount consideration in railway operation and many materials cannot be discarded or altered even temporarily, without disastrous results or without creating needless complications. Under the stress of necessity and the resolution of every railroad as a matter of policy to co-operate in every way possible to see the war through, however, purchasing and stores departments are attacking duplication and other forms of waste in materials, are utilizing and developing substitute materials, and are both intensifying and increasing their reclamation work as never before to reduce the need of new materials and to save labor.

Supply forces are working hand in hand in this work with the technical forces of the railroads, with manufacturers and Government bureaus specializing in conservation, and also with hundreds of interested and observant employees whose genius for improvisation is the equal of that displayed in many other fields of technology. Stockbooks have been combed to eliminate items of material which were selected more for appearance than for utility and to reduce unnecessary sizes and varieties. Materials have been redesigned to reduce or eliminate scarce items; tolerances in repair work have been relaxed impressively to permit reconditioning of materials which were previously scrapped; the use of flame hardening has been increased to prolong the life of materials in service, and cars and locomotives and other equipment are now using materials which were never used before.

In contrast with the conditions during the depression when new materials could be obtained at less expense than it would cost to repair old materials, cost is no

longer a deterrent to salvage work, and hundreds of articles and thousands of tons of materials are now being supplied entirely from scrap. Some of this has been accomplished with the co-operation of manufacturers whose salesmen are now largely engaged in studying and demonstrating ways to reclaim materials sold by them or to use more readily available materials in their place.

Reference is made elsewhere in this issue to the work of joint committees of the Purchases and Stores, Mechanical, Engineering and other sections of the A.A.R. in studying uses of rubber, aluminum, copper, zinc and other acutely scarce materials, in recommending



Handling Scrap on the Santa Fe at San Bernardino, Calif.



the eliminating of certain uses or the reduction in the rubber or metallic content of others, and in enumerating specific ways to conserve the materials in service. Likewise, reference has been made to a handbook listing 375 classes of discarded materials which are susceptible of reclamation and explaining the approved procedure in each case. In almost every instance, the suggestions in these reports merely reflect established practice and experimentation on the railroads, and they are now being followed almost universally. New opportunities for the reclamation of discarded materials were outlined in a report of the joint committee on reclamation which has been released by the Purchases and Stores division within the last few weeks. Reports made year after year by committees of this Division on the simplification of stock items of materials, moreover, not only reflect specific ways in which the railroads have reduced the number and variety of materials purchased, but are now being reviewed by railroads which had not adopted all the recommendations before, and are being added to with each investigation.

New Problems Daily

The record of development in these several fields of material conservation will never be complete because conditions change daily, and many of the steps taken are regarded as routine and are never reduced to writing. The principal effort instead is to impress upon employees the need for conservation and to rely upon their co-operation in their daily work. This is shown when storehouse men are careful in handling materials to avoid loss and damage; when users of materials refrain from ordering, and stockmen from issuing, more material than is required; when old material is used wherever possible in place of new material; when good or repairable materials are kept out of the scrap, and when everything in the scrap that is susceptible of repair or reconversion into useful materials is recovered, at least for study.

One railroad recently met a car repair situation by making 5-ft. car roofing out of 10-ft. car siding. Inferior grades of lumber are now widely being used as a temporary substitute for proper grades, and many ties are being used untreated. Buildings are being constructed or repaired with greater emphasis on the use of brick, cement and tile in place of wood and steel. Structural steel for some authorized building work has recently been made available by splicing together pieces from demolished bridges and steel cars. Steel cars are being repaired by removing only portions of sides and ends that are rusted through, instead of the entire section, and wood cars are being patched repeatedly. While welding rods and welding equipment are scarce, advantage has been taken, with expert advice of manufacturers, to multiply the use of flame cutting and hardening. Paper and fibre are replacing steel in containers for paints, oils and even chemicals. More rail is being welded at the joints to save fastenings and track spikes with cut throats are being repaired, while bolts of all kinds are being rethreaded. Replies which railroads in all parts of the country have made to this paper's request for examples of work being done in this field emphasize how widely and energetically the railway supply forces are pursuing this means of meeting the shortages of material.

The Atlantic & West Point, the Georgia and the Western Railway of Alabama adhere to A.A.R. recommendations in reducing varieties of material, substi-

tuting materials and conserving and reclaiming wherever possible.

The Bangor & Aroostook attempts to use only manufacturers of A.A.R. standards in purchasing new materials. It has substituted wrought iron pipe for cop-

Conservation, substitution and reclamation are words in railway supply work which have been given a new ring by the war. Purchasing and stores departments are attacking duplication and other forms of waste in material and increasing their reclamation work as never before to reduce the need of new materials and to save labor. Stockbooks have been combed for unnecessary items—specifications have been changed to reduce the use of scarce materials—cost is no longer a deterrent to salvage work—hundreds of articles and thousands of tons of material are now being supplied entirely from scrap.

per-steel pipe, and galvanized pipe for brass pipe; is using all the second hand material possible; reclaims freight car side frames; has adopted open hearth carbon steel for alloy steel locomotive forgings, and has recently constructed a normalizing and annealing furnace to facilitate the reclamation of couplers, side frames, etc.

Redesigning Saves Metal

The Central of Georgia has reduced its variety of materials by standardization and the interchange of equipment; is now using a Bundyweld steel tubing in place of copper tubing; is using shims on driving box brasses to obtain longer wear; is using reclaimed babbit for making crosshead metal, and has adopted the use of Meehanite metal for brass shoes and wedges. In many cases where material was purchased for a particular use, this railroad has redesigned and converted it to serve other purposes, and has purchased and installed additional mechanical handling equipment to save labor.

Wood for Rubber Wheels

The Chesapeake & Ohio has effected a 30 per cent reduction in the number of sizes of steel plate, boiler and firebox steel ordered; is using black sheet steel in place of copper bearing and galvanized sheets, open hearth steel bars in place of higher specification steel and substituting larger size steel bars, plates and billets. Scrap air brake and air signal hose are re-used by cutting out the good portion of the tubing and splicing in accordance with new A.A.R. emergency standards. Rubber hose is used in shorter lengths; electric wire is spliced, and iron and steel pipe are used in place of copper. Material is reclaimed as long as it is possible to reclaim it. Wood wheels are used in place of rubber wheels on trailer wagons, and wooden fire barrels and fire buckets in place of metal buckets. Open top non-revenue cars, which were previously used for accumulating scrap for shipment to central sorting yards, have been released and are now used for shipping company material, thereby releasing other cars for commercial use; and freight car equipment is further conserved by loading cars to the greatest ca-

capacity possible. On the Nickel Plate, dry cell batteries are being recharged for use in hand lanterns. On the Pere Marquette, practices are being followed similar to those on the C. & O. and the Nickel Plate.

The Erie has reduced the number of its sizes of steel tubing from 50 to 25. It is making locomotive bells out of steel plates by shaping and welding—this eliminates the use of scarce materials and cuts the weight from 131 lb. to 55 lb. per bell. In material conservation, this road, during the past year, utilized 1,604 net tons of second hand channels, steel plates, trucks, truck sides and other metals in program repairs to 1,192 cars at its Dunmore, Pa., shop, or approximately 1½ tons of second hand material per car, thus decreasing its demands on the steel mills for approximately \$50,000 worth of new material and enabling it to keep a larger number of cars in service.

Nearly 1,000 tons of this metal consisted of large size channels and sheets which had been removed from dismantled cars and used for walks, material platforms, etc. These walks and platforms were replaced with wood.

Fewer Journal Bearings Used

The Erie has also reduced its annual consumption of journal bearings by approximately 350,000 lb. per year by using the newly-designed journal bearing approved by the A.A.R. A modern flue reclamation shop was recently installed at Hornell, N. Y., which cleans and repairs all flues removed on the railroad. The plant is located where most of the flues are accumulated from engines receiving heavy repairs and reclaims flues at the rate of 35 per hour, enabling the railroad to keep ahead of its flue work and aiding substantially in reducing the use of new material. This road pioneered in welding and normalizing couplers in accordance with the A.A.R. practice approved September 1, 1942. Anticipating approval, the road accumulated a stock pile of approximately 4,000 couplers which are now being welded and returned to use in place of purchasing many tons of steel.

Headlights and tender signal lamps have been changed from aluminum to cast iron on the Erie, and the consumption of copper has been reduced about 60 per cent by eliminating copper pipe applications on the outside of locomotive cabs, etc. Other wartime accomplishments of the railroad's supply service include the heavier loading of cars of company material. Scrap and idle materials are kept moving to the central scrap plant through the efforts of division committees composed of representatives from all departments. These committees make monthly inspection trips over the entire railroad. Sidings and other facilities are studied and are retired where their use is no longer justified in view of the emergency conditions.

The Gulf, Mobile & Ohio is practically living out of its scrap piles and fully observing Government specifications in conserving materials.

On the Louisville & Nashville, efforts are continuously being made to reduce the number of sizes and varieties of material; non-critical materials are substituted at every opportunity, and reclaimed materials are considered one of its principal sources for filling requirements for maintaining its equipment and way.

The Monogahela is scrapping all obsolete items of stock and limiting its purchases, so far as possible, to standard sizes; is using non-critical materials, wherever possible, in place of critical materials; is conserving materials by welding old parts; is buying only

to emergency specifications, and is keeping purchases at a minimum consistent with efficient operation.

34 Fewer Sizes of Bar Iron

Conservation practices in use on the Missouri-Kansas-Texas are impressive. It has reduced the number of sizes of locomotive axles in stock from 19 to 8 and flat bar iron from 97 sizes to 63. Cast iron has replaced copper in shoes, wedges and crossheads for locomotives, and high grade iron bushings are used for the slow moving parts on locomotives in place of bronze. The road also uses cast iron or steel in place of brass locomotive stuffing boxes; steel in place of brass water columns; cast iron in place of aluminum for brass badge plates, and malleable iron, steel or bakelite fittings in place of brass locomotive fittings. In uses SAE 1035 to 1040 bar steel in place of the former standard for engine bolts; cast iron locomotive bells in place of brass bells; wood fence posts in place of steel posts, and open hearth steel sheets and plates in place of copper bearing metal.

The railroad is now standardizing piston rod packing to a smaller bore, thus permitting its further use on piston rods; is applying worn rod bushings to larger pins as a substitute for new bearings, and is turning down scrap crank pins of a larger size as a substitute for new crank pins. It is also using webbing in place of leather for engine curtain straps. In many cases, discarded shoes and wedges are re-used in place of new wedges when new driving boxes are applied. Iron tank hose nuts are used in place of brass tank hose nuts, and pipe joints are welded wherever practical instead of using fittings.

Reform Track Spikes

The Katy uses iron pipe in place of copper pipe, galvanized iron for items of brass, and copper and stainless steel in place of iron in brass coach trimmings. It is conserving material by using sheet steel from dismantled tanks for car forgings, and using repaired oil boxes in place of new boxes. A special die has been developed for reforming track spikes, while Super-



Piles of Scrap Rubber Are Combed for Usable Pieces



Repairing Frogs and Switches on the Santa Fe

Oilite bushings have been adopted for brake beam fulcrums and brake levers. Other steps in conservation include the straightening of driver-kinked and other surface-kinked rail, equipping passenger car seats with single coil springs instead of sets, and reclaiming office furniture. Second hand sheet steel from dismantled fuel storage tanks and other sources is used in place of new steel for structures; the single-sheathed longitudinal siding removed from cars undergoing heavy repairs is used in place of new lumber wherever it will serve the purpose; and scrap burlap is used in place of new burlap for cooping around car doors for handling grain.

Interchangeable Brake Beams

The New York, Susquehanna & Western has eliminated all $\frac{1}{4}$ in. lengths of machine and stove bolts and insists on the return of all defective tools to the store.

The New York, Ontario & Western has redesigned several of its patterns to use more easily available material, and is now purchasing adjustable type brake beams for freight cars so that they can be used in either right or left hand positions. This road has substituted cast iron for bronze locomotive shoes and wedges; is using a substitute formula of solder for half-and-half solder, and is using a combination of shellac and castor oil in place of rubber cement. It has salvaged useful parts from all dismantled or worn-out cars and locomotives; has substituted fibre crosshead liners for bronze; adopted terne plate gaskets for copper asbestos gaskets, and is constantly striving to reduce its inventory of material on hand and its purchase of new materials.

Glass for Metal Containers

On the Pittsburgh & Lake Erie, pipe fittings have been reduced to conform to simplified practice recommendation R-185-42, effective January 1, 1942; and bolt, nut, screw and rivet sizes have been reduced to conform to simplified stock sizes scheduled in Maximum Price Regulation No. 147. In the field of substitution, this road is now using package wrappers for typing records, files, etc. Stock 60 kraft, with a patch eyelet on one end and string 24 in. and 36 in. long, is replacing rubber bands and twine. Steel is used in place of brass in wood screws and miscellaneous

hardware. In conservation, this road is splicing air and signal brake hose; is reconditioning Wab company gaskets in accordance with Wab company process; is reclaiming drop forged center plates by straightening and welding where they are cracked; is substituting malleable iron and cast iron for brass castings, and is buying glass jars, bottles and jugs in place of tin and galvanized iron cans, pails, etc.

Wholesale Changes in S. P. Materials

The Southern Pacific, Pacific System, has reduced its variety of material by eliminating 32 items of switch, frog and track bolts, and all rubber baggage mats and sprinkling pots. No. N-248 car scrub brush has been crossed off for its No. 17 scrub brush, and paper hat bags have been eliminated. It has ceased purchasing 50-ton steel wheels, 36 in. dia. and $6\frac{3}{4}$ in. rough bore, for streamline passenger cars, confining purchases to 40-ton steel wheels, 36 in. dia. and $6\frac{3}{4}$ in. rough bore, for application to both conventional and streamline equipment by boring out 40-ton, $6\frac{3}{4}$ in. wheels finished to fit both 40 and 50-ton axles. In addition, 70-ton steel wheels, 36 in. dia. and $7\frac{3}{8}$ in. rough bore, purchased for streamline passenger equipment requiring 70-ton wheels, are used for the streamline passenger equipment requiring 100-ton steel wheels, $7\frac{7}{8}$ in. rough bore, by boring out the smaller size to fit the 100-ton axles. To reduce the stock of boiler steel, this railroad eliminated 10 sizes of sheets, including $\frac{3}{16}$ in., $\frac{1}{4}$ in., and $\frac{1}{2}$ in., and utilizes larger sheets that can be applied without waste. As many as 11 sizes of $\frac{3}{8}$ in. and $\frac{1}{2}$ in. fire box steel were eliminated. Four sizes of 22 in. steel blooms, 9 in. to $14\frac{1}{2}$ in. thick, carried for manufacturing forgings, side rods, etc., were discontinued and only one size, 12 in. by 22 in. by 6 ft. 6 in., is now purchased for all purposes.

In the field of substitutions, 99 items of brass castings formerly cast of brass on the Southern Pacific are now cast in grey iron; 136 items formerly manufactured in brass are now forged from steel and iron; plastic hose couplings and pipes are used instead of brass; scrap plush replaces burlap for the inner covering of seat cushions; heavy building paper or roofing paper replaces duck for car roofs; soap base is used in place of coconut oil soap base in manufacturing liquid soap; galvanized wire cloth replaces 2 items of brass wire cloth; 3 items of hard rolled unpolished

copper have been replaced by galvanized iron;terne tin, No. IX tin, No. IXX tin, and IC tin have given way to galvanized iron, and galvanized iron has been substituted for sheet zinc. Black iron is furnished in place of galvanized iron whenever possible. Ten items of aluminum cellars are now being fabricated from steel.

The railroad has substituted 1¼ in. blued wood screws for brass carpet knobs; wood knobs for porcelain shutter knobs; 50 per cent untinned rivets for 16 items of tinned rivets, and steel chain for nickel plated brass safety chain. Wood farm gates are furnished in place of metal gates, and paper and paper cartons for burlap sack for shipping material. Wood boards with steel tips are furnished for steel running boards, and granite ware is furnished in place of tin wash basins, drinking cups, pails, funnels and measures. Flag and fusee boxes, coal buckets, garbage cans, 5-gal. square cans, one-gallon paint spray cans, 5½ gal. water cans, trainmen's signal cases, section foremen's



Women and the Cutting Torch Are Factors in Railway Conservation

bookcases, outfit car lamp shades, smoke jacks, lamp founts, ventilators, sand scoops and stove shields which were formerly manufactured from galvanized iron are now made of black iron.

All signs which were formerly manufactured of galvanized iron are now made of black iron and wood. Scrap wire and steel rods are used in place of welding rods whenever possible. Terry sponges are used in place of cellulose sponges; plastic sink stoppers in place of rubber stoppers; felt weather stripping in place of rubber weather stripping, and tellurium in place of chrome. One-quart and one-gallon tin cans now consist of reconditioned scrap tin cans received from the commissary. Tank lining has been substituted for light sheet steel, and glass coffee jars are furnished in place of tin cans and cartons. Lower grades of fir, pine and redwood are being used wherever possible. A 3 in. extra heavy wrought pipe is used for feed water pipes on locomotives in place of 3 in. copper pipe. Cotton rope is furnished in place of Manila rope, and wood barrels are used in place of metal drums.

Material is being conserved on the Southern Pacific by purchasing galvanized steel sheets in standard coating. Pressure metals are manufactured from scrap and reclaimed metals. The tin content of brass castings, formerly 8 per cent to 10 per cent, has been reduced, being 5 per cent to 7 per cent; and all No. 5, 8, and 9 lining metals have been discontinued to reduce the use of tin. This road is eliminating all alloys from iron castings manufactured in the iron foundry, and the tin content of No. 1 lining metal has been reduced from 6 per cent to 2 per cent. besides splicing water, air and signal hose, and salvaging all reclaimable rubber goods such as diaphragms and rubber tubes, the Southern Pacific recovers rabbit ashes, recovers the zinc from dry cell batteries for foundry use, and salvages battery depolarizing compound for making flux. Foundry refuse is also reclaimed, and a closer segregation is made of scrap and second hand rail.

Many New Materials

New kinds of material which have been introduced on the Southern Pacific include compound cleaners in place of wiping oil and kerosene distillate. Coal screenings are used in place of a special coal at the rate of 1,500 lb. per day at the Sacramento wheel foundry. The screenings are first ground to a fine dust and then mixed in proper proportion with molding sand. This produces a smooth casting and one that is easily cleaned as the coal dust has the effect of keeping the grains of sand from burning into the surface of the casting. Other new materials include wood cots with wood slats. Cloth ticks filled with straw have been adopted for section laborers and others because of the inability to purchase steel cots and mattresses. The railroad has also begun the use of one piece manganese guard rail for switch turnouts in place of multiple guard rails which had 16 pieces. The one piece guard rail is more readily installed and eliminates frequent replacement of worn parts.

Other wartime accomplishments of the supply department of this road include 34 double decked specially fitted cars in store service for handling double decked loads of mounted wheels. These cars displace 204 commercial cars. More vigorous action is also being given to exchanging surplus stocks with other railroads; while the major accomplishment is handling an increased business with a greatly reduced labor force. This requires continual study and observation by the supervisory force and the establishment of mechanical means of handling work previously performed by hand.

On the Northwestern Pacific, scrap wire screen from Pacific Fruit Express car bunkers and steel fencing removed from station grounds are used for all reinforcing material in place of new reinforcing steel rods in 678 ft. of main drain tunnels and 114 ft. of branch drain tunnels being built at Kekawaka, Calif. Stations and shelter sheds which are no longer needed have been torn down and all the lumber, together with the plumbing facilities, salvaged for repairs to other buildings which are actively in use instead of purchasing new material. Working employees longer hours, Sundays and holidays has, in a measure, met requirements of this railroad for handling material, notwithstanding an extreme labor shortage.

Further references to the attention being given by railway purchasing and stores forces to reclamation, stationery and printing, and other fields of conservation, and also to the installation, use and maintenance of machines to handle material and to save cars and labor appear elsewhere in this issue.

Material Supplies for Equipment Repairs a Headache

Just enough to avoid disaster but deferred maintenance accumulates — Supply of new equipment inadequate

THE trend in the need for expenditures on the maintenance of rolling stock, both of materials and man-hours, closely follows the trend in traffic movement. During the period within which our rapidly expanding program of war production has created critical shortages in most of the materials used by the railways there has been a sharp upturn in the mileage run by all types of rolling stock. Freight locomotive-miles were 14.5 per cent greater in October, 1942, than in October, 1941, and freight-train car-miles, 16.3 per cent greater. Total passenger locomotive-miles increased 17.7 per cent in the same year and by last March had gone on up to 25.7 per cent, while the mileage of passenger-carrying cars of railway ownership had increased 43 per cent in the year and 61 per cent in the 17 months. Within the same 17 months man-hours expended on equipment maintenance had increased 17 per cent.

In the face of these evidences of expanding need for equipment repairs, the problems of material supply the nation over have been growing steadily more acute.

Notwithstanding these marked increases in the service rendered by locomotives, freight cars, and passenger cars, material shortages have not yet been a serious factor in delaying the return to service of needed equipment. The difficulties of securing adequate supplies of material and having them available when needed have been annoying and nerve racking to those who have borne the responsibility of maintaining an adequate supply of serviceable rolling stock, but so far have not seriously endangered the continuity of adequate railway service.

Customary practices with respect to the procurement of materials used in the maintenance of cars and locomotives have been interfered with. In cases where more than average dependence has been placed on manufacturing operations conducted in the railroads' own shops, the growing shortage of manpower has tended to increase the dependence on materials and parts purchased in the market. On the other hand, in some cases where more than average dependence is

placed upon the procurement of materials and parts from the market, increasing dependence is being placed upon shop manufacturing operations, supplied with raw material from the scrap pile. Thus, car axles are a substitute for billets for many types of forgings. Future expansions of this practice, however, are running into manpower difficulties.

The major problems in the procurement of materials for car and locomotive maintenance have had to do with securing dependable deliveries rather than with failure to secure sufficient supplies of materials. Slow deliveries have resulted in instances where completion of equipment repairs has been delayed, but such delays do not seem to have become cumulative to the point of menacing the service. Some mechanical-department officers have helped themselves by anticipating their needs for material somewhat farther in advance, thus reducing the effect of uncertainties and delays in deliveries. The best results are attained where there is the closest cooperation between the using and purchasing departments.

There is little consistency in the kinds of materials the procurement of which has offered the greatest difficulties. With the exception of lumber for car repairs, the difficult items both of tonnage materials and manufactured articles are scattering and indicate no general shortages of any of them.

The fact that no persistent shortages of materials for the repair of locomotives and cars have developed does not mean that there are not plenty of headaches associated with the procurement of these materials from the standpoint of the mechanical department. This arises not so much from a complete malfunction of the WPB system of control as from its inflexibility to meet the exceptions which the rule does not quite fit.

For instance, the War Production Board has been insistent on limiting new locomotives ordered by the railroads to designs which have previously been built. This was done largely from the standpoint of its effect upon the control of the supply of materials to the build-



A Reminder of the Days When Material for New Cars and Heavy Repair Programs Was Easy to Get—Without Priorities, Too

ers. Its somewhat analogous effect on the railroads was apparently overlooked because there are several instances where locomotives which are old designs to some roads have been allocated to others to whom they are entirely new. The problem then arises of securing an adequate supply of parts not standard to any other power on the railroad to protect the service of these locomotives. With rigid inventory control, these lump additions to material stocks require much argument and harassment both to motive-power and purchasing officers.

Are Repairs Being Kept Up?

From what has been said with respect to the lack of serious shortages of materials for use in repairing cars and locomotives it should not be inferred that the maintenance of equipment is being kept up on a strictly current basis. There has been a steady accumulation of deferred maintenance for the past year and a half. This, however, is in such items as can be deferred without endangering the safety of operation or the immediate serviceability of the equipment.

Repainting of cars can be deferred without interfering with either safety or serviceability. Programs for the rebuilding of freight cars by series can also be deferred in many cases by resorting to a certain amount of patchwork repairs on individual cars which can no longer be kept in serviceable condition without something more extensive than ordinary running repairs. By thus postponing rebuilding programs for which adequate stocks of materials cannot be accumulated under present inventory control and, indeed, for which sufficient cars of a series cannot be spared from service to permit the operation of series rebuilding programs to be conducted effectively, all previous records as to the percentage of cars in serviceable condition have been broken during the past year.

Refrigerators Can't Just Be Patched Up

There is one type of car, however, to which patchwork repairs cannot be applied as a policy. This is the refrigerator car. The effective life of these cars is determined by the life of the insulation. The structural conditions which call for complete rebuilding of the car body also cause the destruction of the insulation. It is not general practice to overhaul these cars by series; each car is withdrawn from service for rebuilding based on its condition as disclosed by thorough inspection. When such an inspection discloses evidence of body racking, the serviceability of the car can only be restored by complete rebuilding. Decay of wood sills and frame members leaves no foundation for patchwork.

Locomotives cannot be kept in service without periodical classified repairs. The utmost ingenuity is being exercised to extend mileage between class repairs and, when the locomotives do go into the shop, little, if any, labor or material is expended on alterations or betterments. The railroads are taking advantage of every opportunity to request extensions in the time for the removal of boiler tubes and lagging. While these extensions have some effect on the consumption of materials, their more immediate effect is the increase in available locomotive days and the reduction in demands on manpower.

There are obviously limits of time beyond which the accumulation of deferred maintenance will cease to be an effective substitute for a fully adequate supply of materials for periodic renewals. Whether these limits will be reached before the end of the war is a question which

no one can answer until he knows when the war will end. The peak of our war industrial effort is expected to occur during 1944. It is not improbable that the peak of the effectiveness of present practices in the matter of deferred maintenance will be passed within a year. If this proves to be true, it means that more material and more man-hours will have to be expended to keep up the present level of serviceability of equipment.

Late in 1942 material was allotted for 20,000 cars to be delivered during the first six months of 1943. With the 12,000 cars authorized for construction during 1942 but still not delivered on October 1, there would be an addition of about 32,000 new cars, largely open-top, before the Fall of 1943. At the rate of permanent removals which prevailed in 1942 this would provide a net increase of about 27,500 cars. During the first five months of 1943 there has been a net increase of only 4,000 open-top cars. This is the answer to the adequacy of the supply of materials for new cars approved for building by the WPB. No orders for box cars were included in the 20,000, the construction of which was authorized by WPB. At the end of May there were about 3,700 fewer box cars of railroad ownership than there were at the beginning of the year.

Car Building Behind Schedule

A large part of the productive capacity of the car-building industry has been lost to the railroads for at least five months and it is extremely doubtful whether the program contemplated at the first of the year for completion during the first half of the year will be completed much before the end of the year.

So far, through careful handling by the railroads and the splendid cooperation of the patrons of the railroads in promptly loading and unloading, there have been no serious car shortages, despite the fact that traffic in March and April, measured in net ton-miles, was larger than in any month of 1942 except October. During the first half of 1943, it is true, the number of loads of carload traffic had declined about three-quarters of one per cent from the first half of 1942. The trend of these loadings, however, does not tell the whole story as to the strain on the car supply. There has been a continued increase in the average haul. Total miles per car loaded were about 8 per cent higher during the first quarter of 1943 than during the third quarter of 1942. The continued downward trend in the number of surplus cars is evidence of the increasing strain which is the inevitable result of long sustained high utilization rates.

What Will Fall Traffic Be?

How short the supply of cars will be during the Fall, of course, depends upon the traffic trend during the next few months. If there are no further interruptions in the production of coal, the performance during the first quarter of 1943 would indicate a possible increase during the third quarter of about 7½ per cent over the third quarter of last year. Ore loadings are still lagging behind last year's level. They may increase considerably above that level. Miscellaneous loadings—the largest single commodity group—is an index of general industrial activity. These loadings have been following last year's trend very closely and there seems little reason to anticipate that they will exceed last year's loadings appreciably during the remainder of the year, unless there is a sharp increase in the westward movement of materiel associated with warfare in the Pacific. Forest products have been running consistently lower than last year. For

the first half the reduction in loadings was over 13 per cent. At present, indications are that merchandise-l. c. l. car loadings will run about 14 per cent above the last half of last year.

These changes roughly indicate possible increases in loadings of some 10,000 open-top cars a week and 12,000 box cars a week more than during the third quarter of last year. There is little slack from which to increase the supply of serviceable cars any further; that was taken up last year. And the additions to the inventory will fall below the level which even WPB accepted as essential.

Locomotive Situation

In the matter of the sufficiency of motive power there are one or two things that stand out in bold relief at this time. One of these is the average locomotive-miles per locomotive day—in both freight and passenger service—and the other is the factor of stored serviceable power. Speaking specifically of freight service, some indication of the demands being made on locomotives may be seen in the fact that the average mileage of freight locomotives has risen from 66 in October, 1938, to 76.5 in October, 1939; to 79.2 in October, 1940; to 98.4 in October, 1941, and to the record figure of 110.7 in October, 1942. In March, 1943, it stood at 109.7.

In April of this year there were in storage just 283 serviceable freight locomotives—the lowest freight motive-power reserve in the history of railroading. In that month 19,162, or 87 per cent, of the 22,030 freight locomotives were in active service and 2,585 were in or awaiting shop. This low reserve of 283 stored serviceable freight units takes on added significance when it is realized that a locomotive inventory, 58 per cent of which was over 20 years of age in 1935, has now 73.4 per cent of its units over 20 years old.

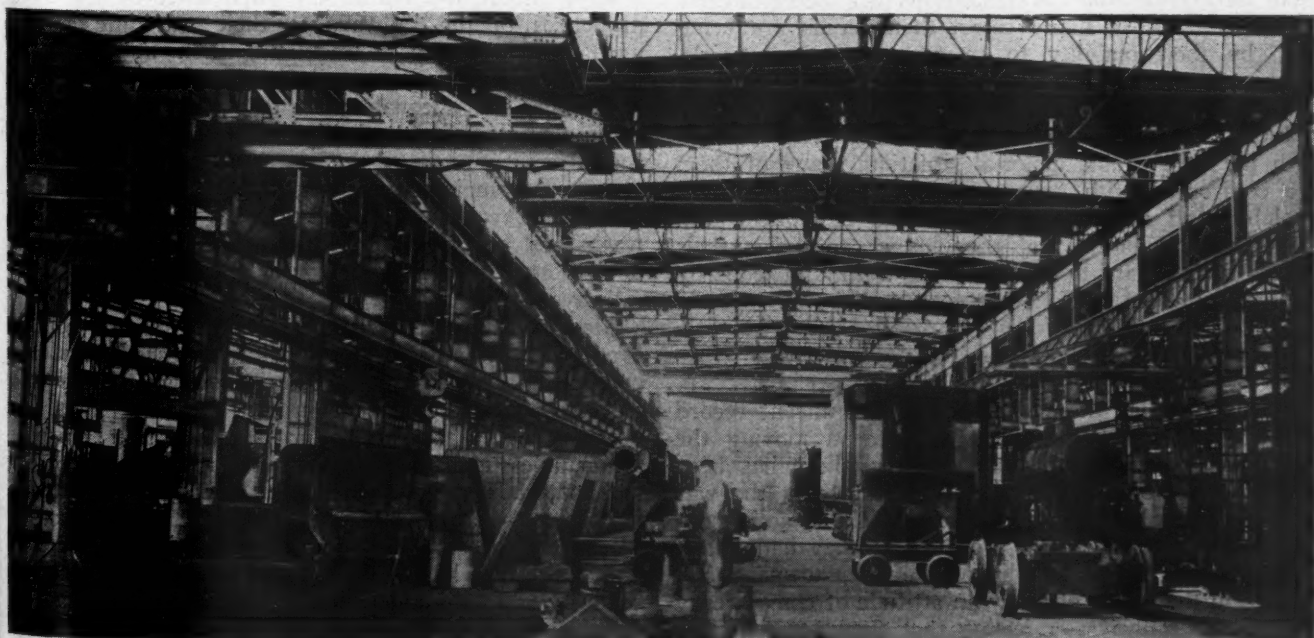
At the beginning of 1942 it was estimated that approximately 1,000 new locomotives would be needed to handle the expected traffic of 1943. During 1942 orders were placed for 360 steam, 563 Diesel-electric, and 12 electric locomotives, the majority of which were needed for freight road and yard switching service. On April

4, 1942, the "freeze" order was issued by WPB and at the end of 1942 approximately 40 per cent of the steam locomotives ordered were still "frozen." In the first half of 1943 eighty steam locomotives were delivered to the roads and, at this time, a schedule of monthly deliveries involving 536 more steam units has been released by WPB. Approximately 450 Diesel-electrics will be delivered, under present plans, during the next nine months.

Last October, when there was a reserve of 340 stored serviceable freight units and 87.8 per cent of the freight power was in active service, the movement of traffic totaling 141.8 billion gross ton-miles required 70.4 million locomotive miles. At that time there were 22,027 freight locomotives; in April of this year there were 22,030 freight locomotives. Whether or not the new power which the railroads have been permitted to acquire is sufficient may possibly be indicated by the fact that the shops are no longer able to do much more than to hold their own and that where last year's real excess motive power capacity lay in the ability to return power to service in a shorter time than formerly, we seem now to have reached a point where further reductions in shop time are not possible because of manpower shortages and the need for new shop equipment.

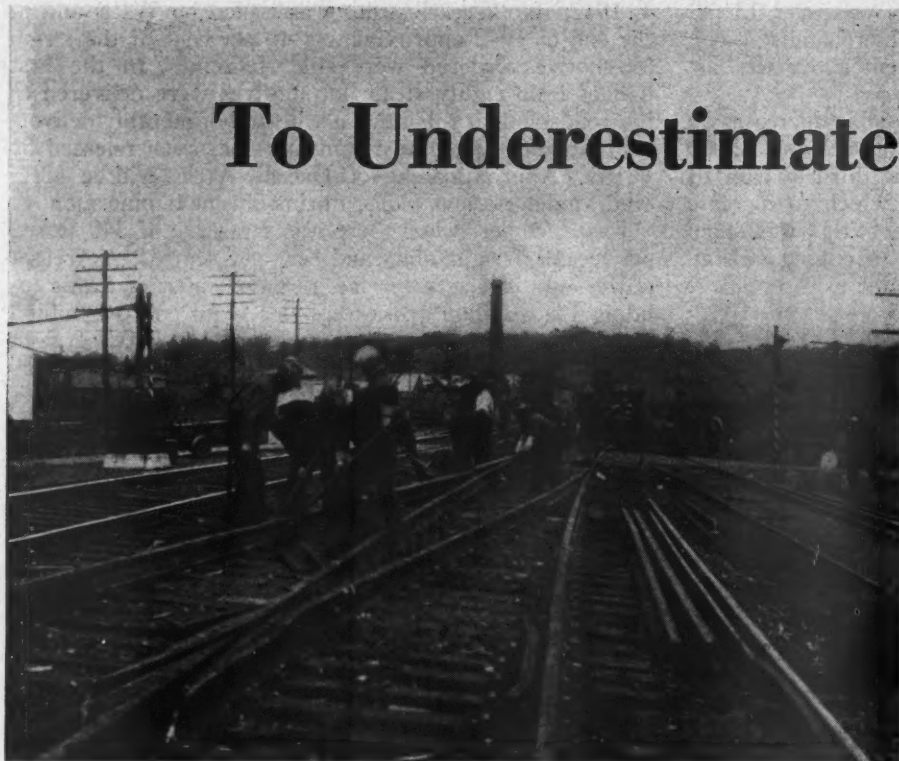
Motive Power Is Being Exhausted

Locomotive operation at the high sustained rate of usage that is being experienced today is quite possible for short peaks such as those ordinarily experienced each Fall, but for almost a year freight transportation has required the active use of from 85 to 87.8 per cent of our locomotives and the reserve has not been over 500 units since August, 1942. The forced retirement of obsolete power has practically offset the installations of new power so that by the coming October there will probably be fewer than 200 more locomotives available for freight service than there were last October. This is the locomotive situation at a time when the indications are that 10 to 15 per cent more train-miles will have to be run than during the third quarter of last year, without allowing for any extraordinary westward war movement.



The Shops Turn Locomotives Out with Such Despatch That There Are Pits "for Rent"

To Underestimate the Needs Is to



Rail Is the No. 1 Material Need of the Track Forces. Unless More Is Allowed the Railroads, Weakening of the Track Structure, Already Well Under Way, Will Become Serious

RAILWAY engineering and maintenance officers are vitally concerned about the material situation. They are confronted with the challenge of keeping the fixed properties of the railways adequate to the needs of war-time transportation—needs that for months have exceeded all previous records, and which continue to increase—and with tireless energy they have set their face to meet that challenge. But they are concerned, many deeply, because, while confronted with more severe wear and tear of their tracks and structures than at any time in history; while witnessing existing congestion because of inadequate facilities; and while visualizing critical bottlenecks in the making, their efforts to improve conditions are being largely restricted, and, in many cases, their hands are being tied, by their inability to secure essential materials, combined with the often erratic and delayed delivery of such materials as are available.

Increasing their concern is the fact that, coupled with the unfavorable material situation, many of them are confronted with serious, if not critical, shortages of labor and inadequate complements of work equipment—a combination that they know can defeat their efforts, with hazard to every moving train, and jeopardy to the war effort itself, if not corrected.

Must Recoup Current Wear and Tear

Fortunately, as the result of the magnificent record that the railways have made to date in moving the heavy war-time traffic of the country, there has been a growing recognition of their importance in the war machine, if only by a realization of the chaotic conditions which would have prevailed if they had failed. But, unfortunately, this record of achievement has created in the minds of many an attitude of complacency toward the railways—a feeling that they are self-sufficient; that come what may, they can carry the load. Unfortunately too, there are those in authority who

have not had it brought adequately to their attention or who fail to see regardless, that with the war peak still ahead for the roads, most of which have already dug deep into the service life of their tracks and structures in their war effort to date, the hazard of gross inadequacy, if not a breakdown in facilities at many points, is still possible—indeed a definite possibility—unless the railroads are allowed to recoup current wear and tear and to provide the added facilities essential to the anticipated load.

Eastman and Commission Show Concern

Even many who realize the importance of the fixed properties of the railways to their war-time assignment have difficulty in translating their understanding into terms of adequate rail, adequate ties and track fastenings, and adequate main tracks, yards, terminals, passing tracks, signals, bridges, buildings and fuel and water facilities. It is the responsibility of every engineer and maintenance officer that they make this translation readily and accurately, to the end that the tracks and other elements of the fixed properties shall not become the limiting factor in the war effort of the railways.

Many of those exercising direct or indirect control over the railways and their operations these days, and many in military service, who best know what inadequate transportation would do to cripple the war effort, appreciate that there can be no adequate rail transportation unless the roads are allowed sufficient equipment and materials to offset wear and tear, and to provide for their essential further requirements. On numerous occasions, Director Eastman of the Office of Defense Transportation has pointed out the need for adequate roadway and terminal facilities, and has urged that the railways be furnished with the materials necessary to that end.

Supporting him in his pleas, the Interstate Commerce

of the Fixed Properties Undermine the Railroads

Peak war traffic and more intensive operation, combined with shortages of labor, require that necessary materials be made available for an adequate track structure, adequate bridges, buildings, yards and terminals, and fuel and water facilities. Deprived of essential materials, the fixed properties cannot keep pace, and if they fail, war transportation must fail

Commission has expressed deep concern about the equipment and maintenance situations on the railroads—pointing to the increasing accident rate that is occurring and, in its latest annual report, warning that “unless there can be allocations of sufficient materials to the transportation agencies to permit them to maintain, renew and operate their plants so they can continue their present standard of service, more restrictive government control of the use of transportation services will necessarily follow.”

What these authorities have said in the interest of maintaining the fixed properties of the railways adequate to the war needs is based upon experience, understanding and foresight, supported by the recommendations of practical railway engineering and maintenance officers, who alone have first-hand, intimate knowledge of conditions in the field and of the physical limitations of their existing plant. Unfortunately, however, there are others exercising indirect control over the railways, largely through the control of materials essential to their welfare, who, through lack of practical railroad experience, do not have the same appreciation of railroad needs. To these men especially, engineering and maintenance officers have a very definite responsibility to make their requirements understood. With-

out the supporting data which only these officers can give, these men, regardless of their sincerity and capabilities, cannot have a full realization of the needs of the roads, and a clear understanding that the adequacy of the tracks and other fixed structures, tomorrow, in six months, and frequently a year or more hence, depends often upon what materials are ordered or are made available today.

These men will have little difficulty in recognizing the inadequacy of the track structure, of yards, terminals, passing sidings, signals and fuel and water facilities if serious accidents begin to occur or train delays begin to pile up, but that may be too late to prevent serious interference with the war effort. Furthermore, if such a situation should develop, it might take months to overcome, and then be possible only by the expenditure of many more thousands of tons of materials than would be called for by the current maintenance of facilities to an adequate level.

Such facts must be stressed repeatedly by engineer-

Ties and Structural Timbers Are Other Essentials of the Fixed Properties of the Railways, Which Cannot be Withheld or Made Unobtainable Without Serious Consequences to the Country's War Effort



ing and maintenance officers. More than that, these officers should make it clear that, while near-miracles in construction have been accomplished with moderate equipment, additional main line, yard and terminal facilities cannot be built in a day, and that, therefore, major increases in traffic demands, to be handled successfully, require the anticipation of needs, weeks, if not months, in advance. Cars can be shifted about the country at will, and even locomotives can be transferred from one road to another to meet an emergency or a change in traffic demands—but the same cannot be done with main tracks, sidings, yards, shops and terminals, without which the transfer of cars and locomotives might prove of little avail.

No one knows these facts more intimately than those officers in direct charge of these facilities; no one is more vitally concerned than they. Therefore, they must anticipate their maintenance and construction requirements more accurately than ever before, and then, in the interest of the war effort, must insist in unmistakable terms upon the materials necessary to meet these requirements. To do otherwise is to fail in their responsibility to their respective roads and, of far greater importance, to the country in its hour of greatest need.

And what can be said of the needs of the railways in the interest of the war effort, can be said of their requirements to meet the needs of a crucial postwar period—a period of adjustment throughout the world which may well present as critical transportation problems as the war itself; a period that must be weathered successfully to insure victory in peace. To meet the demands of this period, which will include the complete readjustment of American industry and the satisfying of the pent-up desires of 135,000,000 Americans for the necessities and luxuries of which they have been deprived by the war, can be achieved only with the aid of adequate railroads—railroads unimpaired by the war—that can pick up the load, whatever it may be, and carry on. Fortunately, the needs of the railways for this period are not inconsistent with the immediate needs of the war period.

Depression Weakened Properties

That the railways are in need of much equipment and large quantities of essential materials to carry the transportation load ahead is due in large measure to the prolonged economic depression of the Thirties, plus the record-breaking traffic that they are now carrying, along with the fundamental changes in traffic demands occasioned by a two-ocean war. It cannot be denied that, to survive the depression, expenditures for the maintenance of existing roadway facilities and the construction of new roadway facilities were cut to the barest necessities—and that such expenditures as were made, were approved largely on the basis of actual need or operating economies. At the same time, no one will deny that during the years of the depression, the railroads revolutionized much of their passenger and freight service in the interest of the public, and that with the upturn of business, the initial defense effort of the country, and our involvements in war, they have increased their preparedness and service progressively to the point where it has now long been limited largely alone by their inability to secure adequate materials and equipment.

The manner in which the fixed properties of the railways have fared from the standpoint of maintenance since the depths of the depression, indicating part cause for much of their current needs and, at the same time,

the Herculean efforts that they have been making to meet present traffic requirements, is evidenced best by the record of expenditures for maintenance of way and structures over the subsequent span of years. In the years 1932 to 1934, inclusive, at the bottom of the de-



Large Quantities of Structural Steel Are Essential Annually to the Safe Maintenance, and Strengthening Where Necessary, of the Many Thousand Railway Bridges of the Country

pression, these expenditures, which in the years 1925 to 1929 had averaged \$849,021,000, dropped to an annual average of only \$346,255,000, or nearly 60 per cent. Reflecting the gradual upturn in general business, and, more particularly, the relatively favorable years of 1937, 1939 and 1940, the average annual expenditures for maintenance of way and structures in these years rose to \$486,000,000.

In 1941, in step with the growing defense effort of the country, expenditures for similar purposes rose sharply to more than \$600,000,000, and since the entry of the United States into the war, with the huge additional demands that have been placed upon the roads, expenditures for maintenance of way and structures, to keep pace with requirements, have been limited almost entirely by the ability to secure essential materials—expenditures for these purposes rising to more than \$775,000,000 in 1942, higher than in any year since 1929, and continuing upward thus far in 1943.

The fact that during this same period improvements of and additions to the fixed properties of the railways took a terrific slump, to be followed by large increases as business improved and earnings made possible, is seen in comparable figures in this regard. From an annual average of \$478,174,000 in the years 1925 to 1929, expenditures for additions and betterments dropped to a low of \$88,493,000 in 1933. Rising from this low, expenditures for additions and betterments rose to \$186,916,000 in 1937, to \$157,241,000 in 1940, to \$175,453,000 in 1941, and to \$185,523,000 in 1942.

These figures show conclusively that the railways have been currently alive to their increased responsibilities with the increasing traffic of recent years, but whether the largely increased expenditures for additions and betterments and for maintenance in these years have been adequate can be answered only by reviewing them in the light of past experience and of traffic demands.

In the period from 1925 to 1929, inclusive, when average annual expenditures for maintenance of way and structures were approximately \$849,021,000, and when average annual expenditures for additions and betterments were approximately \$478,174,000, average annual revenue-ton miles were approximately 433,307,000,000. By comparison in the latest five-year period, 1938 to 1942, inclusive, when average annual expenditures for maintenance of way and structures were only \$572,419,000, and average annual expenditures for additions and betterments were only \$151,677,000, annual average revenue-ton miles were approximately 421,983,000,000. From these figures it is evident that whereas for the two periods, the need, as represented by revenue-ton miles of traffic handled, was only 2.7 per cent smaller in the more recent five-year period, average annual expenditures for maintenance of way and structures in the later period were more than 32 per cent smaller than in the earlier period, and average annual expenditures for additions and betterments were more than 68 per cent smaller.

Thus, since the depths of the depression, traffic has far outrun expenditures for both maintenance of way and structures and for additions and betterments, and the fact that the trend continues to the present time is seen in the statement that whereas actual expenditures for maintenance of way and structures for the first four months of the current year exceeded similar expenditures for the first four months of 1942, by approximately 22 per cent, revenue-ton miles in the current year are exceeding those of last year by more than 26 per cent.

In the face of these facts, two things are readily evident;—first, the greater traffic drain on the fixed properties in recent years per dollar of expenditure for maintenance of way and structures, and second, that maintenance and construction have not kept pace with the recent record-breaking demands of traffic. More serious than both of these is the fact that the situation still prevails, and will continue to prevail until, under the added strain, there will be a progressive breakdown of the railways, with its certain adverse effect on the war effort, not to mention its effect on post-

war conditions, unless a way can be found to allocate to the railways sufficient critical materials to meet their essential needs, and to remove price or other barriers which make it impossible for them to secure other urgently needed supplies.

Must Have More Rail

Unquestionably, the No. 1 material need for the maintenance of way forces is rail. This was their No. 1 need late in 1942 when the railways estimated their essential requirements for 1943 at 1,875,000 gross tons. It was their No. 1 need in April of this year, when Roy B. White, president of the Baltimore & Ohio said in an interview, "Only a shortage of steel rails can prevent the American railroads from establishing new pinnacles of war-time transportation— — —." It was their No. 1 need a month later when Ralph Budd, president of the Burlington system said, "The extremely severe use of the railway plant has caused rail to become perhaps the most critical of all our material problems— — —;" and it is still the No. 1 material need of the maintenance forces of today, if not of the railways as a whole, as the War Production Board continues to restrict rollings to a point far below the urgent needs of the roads.

As pointed out in the May 22, Freight Progress Issue of *Railway Age*, the railways, for 1943 replacements, estimated their requirements at 1,875,000 gross tons (2,100,000 net tons). In its desire to be ultra-conservative in the face of other essential needs for steel, the Office of Defense Transportation, acting for the railways, requested from the War Production Board only 1,607,142 gross tons of rail for the year (1,800,000 net tons), which in equal installments, would have allowed 401,785 gross tons (450,000 net tons) in each of the four quarters of the year. At the same time, it urged that the preponderance of the rail be made available in the first three quarters of the year to permit better laying and surfacing conditions than might prevail later in the year, at least on roads in the North.

In the light of their request, the WPB first authorized the rolling for delivery in the first quarter, of 428,571 gross tons (480,000 net tons), which raised hopes among maintenance men that, with comparable allowances in the second and third quarters, they would receive their essential needs for the year. But these hopes were short lived when the first quarter allotment was subsequently cut to approximately 357,143 gross tons (400,000 net tons), and were shattered when

Yards and Terminals Are the "Heart" of Freight Operation. Without Sufficient Tracks of Proper Length and Adequate Engine Facilities, They Can Restrict Train Movements As Effectively As Inadequate Main Line Tracks



the WPB authorized only 312,500 gross tons (350,000 net tons), for rolling and delivery in the second quarter, in spite of protestations on the part of the railroads.

On top of this, making the situation serious, if not critical, on many roads, the Board allotted only 335,714 gross tons (376,000 net tons) for rolling in the third quarter. Thus, for the first three quarters of the year, the roads can expect to receive for replacements only 1,005,357 gross tons (1,126,000 net tons), in the face of their essential requirements for this period of 1,205,355 gross tons (1,350,000 net tons).

This sharp reduction in steel allowed the railways by WPB in the third quarter was viewed with alarm by ODT, as was indicated by Director Eastman, who, when the figures were first brought to his attention, predicted that "serious consequences" were likely to develop unless the WPB's Requirements committee allocates more materials—especially steel—for the transportation industry in general, and particularly for freight car construction and new rail during the third quarter of the year. "The rail situation", he said, "is being watched closely by this office. If the amount of steel for this purpose should prove inadequate to maintain the roads to reasonable operating standards, further steps will have to be taken. Obviously, rail cannot be allowed to deteriorate beyond a certain point before being replaced." That the danger of such deterioration is very real and imminent was indicated by a further comment by Director Eastman that the reduction in the amount of steel available for the third quarter may make it necessary for some carriers to reduce their standards of service.

In spite of this warning, and the recently inaugurated drive by the WPB—at the instance of War Mobilization Director Byrnes—to increase steel production in the country by 1,000,000 ingot tons in the third quarter, there are indications that the railways can expect no more rail in the fourth quarter than was allowed in the third. If this comes to pass, the roads should express their concern to the WPB in no uncertain terms, and should adjust their rail requests for 1944 upward accordingly to offset the serious deficiencies of the current year.

Crosstie Stocks Down

Second only to rail in importance to the track structure are crossties, and, unfortunately, second only to the problems presented by the rail deficiencies which have developed, is the tie shortage that is developing—indeed, which has already reached serious proportions in many sections of the country.

With no restrictions on most classes of crosstie timber, the tie problem arises from entirely different causes than that of rail—a drastic reduction in the production of ties in many areas. This situation, beyond the ability of the roads to correct, has been brought about by a variety of reasons, including the shift of a large number of tie mills to the manufacture of dimension lumber; the two-ceiling levels established for ties, which, until late spring, gave the army and navy an advantage in the tie market; the drain of the military services on the manpower of the tie industry; and, of considerable importance, the loss of tie cutters to farming and other industries which afforded higher earnings or a more favorable induction deferment status.

Fortunately, many roads had adequate tie stocks on hand for the current season's renewals, although many others did not, and are now being forced to curtail

needed replacements. Fortunately too, recent actions of the Office of Price Administration and the War Manpower Commission have stabilized conditions somewhat in the tie industry, but the great drop in production that had already occurred, and the still limited production under way and in sight in many areas, augur serious shortages in ties for many roads in 1944 and 1945—shortages that, in the face of unrecouped tie deficiencies created during the depression, inadequate rail, and shortages in labor for routine track maintenance, must be overcome if a materially weakened track structure is to be prevented.

Large Bridge and Building Requirements

Important as are rail and ties, they represent only part of the needs of the fixed properties of the railways to meet the demands of the heavy and growing war traffic. The more than 4,000 track miles of wood and steel bridges, require large quantities of materials to protect them against decay and corrosion. Without these materials, applied when needed, thousands of tons of steel and hundreds of thousands of board feet of timber would be lost annually through deterioration that could be overcome only by replacements.

In spite of efforts to salvage steel spans no longer required, reworking the component parts for the repair of other spans, large amounts of new steel must be had by the roads annually for repair purposes. Still other sizeable amounts are required for increasing the carrying capacity of bridges on lines on which heavier power is assigned to meet new traffic demands. Added to this is the large amount of timber that is required annually for the repair, strengthening and renewal of timber bridges, which cannot be deferred or delayed beyond a certain point without restricting loadings and train speeds, if not presenting a hazard to train operation itself.

With more than 320,000 buildings of more than 100 different types to maintain, it is evident that from the standpoint of minimum maintenance alone—maintenance that is essential to the welfare and safety of the large and growing volume of passengers and employees, essential to the protection of the millions of dollars worth of products being handled by the roads, and of the millions of dollars worth of irreplaceable machines and equipment in shop, terminal and roadway buildings—large quantities of materials and equipment must be had by the roads annually for building maintenance. Supplementing this, in the face of changed and enlarged traffic demands, essential shop and terminal expansion, and the need for providing housing for thousands of additional track and mechanical department employees out on the line and at isolated shop and terminal points, it is evident that large additional amounts of building materials and equipment are required by the roads for new construction.

Fuel and Water Facilities Must Keep Pace

As in the case of buildings, many roads need additional or enlarged fuel and water stations to take care of enlarged demands or changed operating conditions. At many points where they have relied upon municipal water supplies, these supplies have been cut off or restricted because of the increased needs of war industries. At other points they need new or augmented supplies to replace depleted or exhausted supplies, and as a precaution against recurring droughts, which would

hamper operations and require the use of hundreds of tank cars for handling water.

In spite of all that has been done in the way of locomotive boiler water treatment, which has contributed so largely to improve locomotive performance and to reduce locomotive maintenance in recent years, not to mention the long locomotive runs involved in present-day train operation, the fact that only approximately 38 per cent of all locomotive boiler waters are given any form of treatment is an indication that only a large expansion of boiler water conditioning can bring about the further improved locomotive performance that is so essential in view of the present inadequacy of power. In former years, the provision of improved boiler water through treatment has been based largely upon economic consideration. Today, in the light of traffic demands and limited amounts, if not shortages, of power, maximum locomotive performance, with minimum loss of time and use of materials for maintenance and repairs, must be the controlling basis. At the same time, under today's more intensive locomotive operation, water treatment can be justified at many points where its economies have been questioned in the past.

Adding to all of these considerations in the interest of improved locomotive performance and train operation, many roads seek to relocate or regroup present water and fueling facilities and to increase the rate with which locomotives can be refueled and watered. That there are large operating advantages in such measures, which should not be overlooked in the light of reductions in train delays, is seen in the fact that by such measures at two main line points recently, one road has cut 15 min. from the time required by every freight train to refuel and replenish its water supply at each of these points.

Yards and Terminals Cannot Be Neglected

In addition to all of their essential on-line facilities, the necessary maintenance and improvement of yard and terminal facilities, the very "heart" of freight operation. Without adequate yards and terminals — and many present yards and terminals are today inadequate and promise to become more inadequate with further increases in traffic and changes in traffic flow—congestion and delays can offset the advantages of even the highest standard main line. Therefore, to the fullest extent possible, yards and terminals must be kept in balance with main track capacity, adjusting layouts, strengthening tracks and adding new facilities where necessary to this end.

To keep pace with current needs will require entirely new yards at a number of points and the expansion and lengthening of tracks at many others. At the same time, to increase their capacity, expedite classification and speed the make-up of trains for road movement, many yards will require improved means for handling waybills; equipment for the rapid formulation and distribution of switching lists; modern communication systems; car retarders; power-operated switches; adequate signals; floodlights to expedite night operations; and, in northern climates, switch-heaters, or snow melters, to keep switches operative under the most severe conditions of sleet and snow. To neglect to provide or to maintain such facilities where essential will create bottlenecks that no other measures can offset or overcome.

From the foregoing, it is readily evident that, for the routine maintenance and necessary expansion of their fixed properties, the railways—in the interest of the war

effort—must have a large volume and a wide variety of materials, many of which, unfortunately, are also in great demand by others. By resourcefulness and ingenuity, they will keep their requirements of critical materials to a minimum, but beyond that, it would be short sighted, and contrary to the best interests of the country for them to neglect their needs or to stand by complacently while others underestimate their requirements and make it impossible for them to meet them.

That engineering and maintenance officers have and will continue to stretch out the life of existing materials as long as possible, and will keep demands for new critical materials to a minimum consistent with the adequacy of the fixed properties to traffic demands, is seen in the many expedients which they have adopted or expanded greatly in the interests of material conservation. Some of these include rail end welding, grinding and heat treating; the reforming of angle bars; the flame-straightening of bars in track; the use of rail joint shims to overcome fishing wear; the cropping of corroded and worn rail ends in or out of track; the more extensive use of transverse fissure detector cars to limit the number of defective rails removed from the track to those known definitely to have potentially serious defects; the patching and strengthening of steel and timber spans; the reworking of old bridge and turntable trusses and girders, frequently rebuilding them to shorter lengths to increase their load-carrying capacity; and the widespread reclamation and repair of tools, track fastenings and bridge and building hardware.

In these and many less obvious ways, such as reinforced embankments, wider cuts, improved roadbed drainage, more and better ballast, greater refinement in the maintenance of line and surface, more adequate rail anchorage, etc., engineering and maintenance officers, employing a limited amount of or no critical materials at all, are adding months and even years to the life of existing critical roadway materials. To continue to carry on this work, however, especially in the light of the serious manpower shortage and the greater amount of work required to maintain old and weakened materials, they must have large numbers of power tools and units of work equipment yearly.

During the last six years, expenditures for such tools and equipment, including cranes, pile drivers, drag lines, tie adzers and cutters, spike pullers and spike drivers, ballast cleaners and scarifiers, tie tampers, ditchers and grading equipment, and various types of track motor cars and trucks to carry men and materials, have amounted to nearly \$6,000,000 annually, reaching a peak of \$10,500,000 in 1941, a peak that was not exceeded in 1942 only because of restricting material priorities which made unavailable all of the equipment that was desired. With the more intensive use that is now being made of such tools and equipment to offset deficiencies in materials and labor, it is doubtful if the current requirements of the roads can be any less than they were in 1941 and 1942. Rather, it is certain that the time will soon come when they must have more, and must have access again to certain types of equipment that are now frozen and unobtainable.

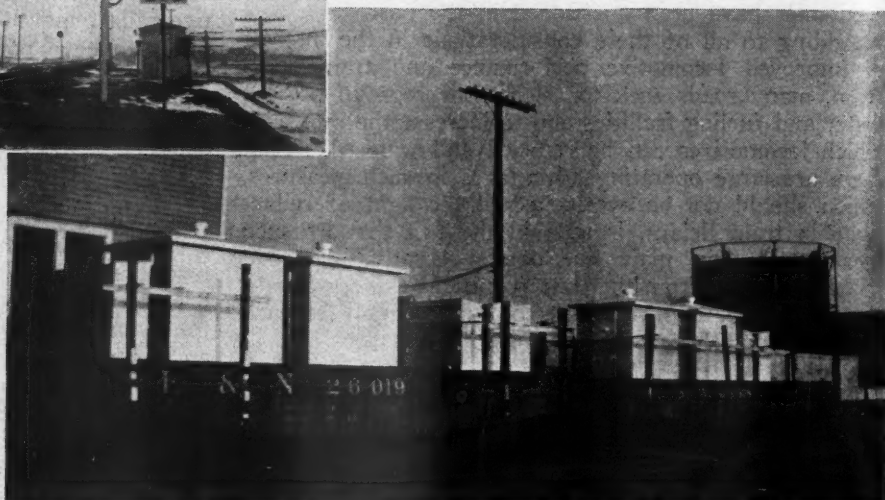
All of these material and equipment requirements of the railways are the joint responsibility of engineering and maintenance officers, the Association of American Railroads, the Office of Defense Transportation and the War Production Board. In view of what is at stake—the very foundation of adequate war-time transportation—it is inconceivable that any of these parties will fail in their share of that responsibility.

Need More Materials for Signaling

Requirements must be met for new construction as well as maintenance, repairs and operations



Above — Centralized Traffic Control Keeps Trains Moving on Single Track Lines
Right — Sheet Metal Relay Cases for a C.T.C. Project



THE procurement of supplies and materials for railroad signaling systems during the war has followed a pattern that differs from that prevailing in most other branches of railway service in that new construction has continued at normal level, thus requiring large quantities of equipment and materials in addition to those required for routine maintenance, repairs and operations.

C. T. C. the Principal Active Need

A principle was adopted early in the war to the effect that no extensive additions to fixed railroad facilities would be permitted except where such projects would contribute directly to the war program. This policy resulted in the restriction of new interlocking construction to projects involving replacements on account of fire, or the result of extensive track changes which had been made previously. The construction of new automatically-controlled highway-railroad crossing signals and other forms of protection at such crossings was restricted to those crossings where highway traffic had increased due to the construction of new military camps or war industries. The reduction in the new construction of interlockings and highway-railroad crossing protection has, however, been more than offset by the increase in the construction of new centralized traffic control.

Centralized traffic control, as applied on single track,

includes semi-automatic signals at the ends of passing tracks which direct and authorize trains to: (1) Keep moving on the main line; (2) enter the passing track, or (3) depart from the passing track and proceed to the next station. As a general rule, these C. T. C. projects include power switch machines which, together with the semi-automatic signals, are controlled from some central office on an extended territory up to 100 miles or more in length. As compared with the former practice of authorizing train movements by time table and train orders and the use of hand-throw switch stands, this C. T. C. system saves a lot of train time that otherwise is wasted when waiting on passing tracks. There is nothing new about this C. T. C., for the first project was placed in service in 1927, but the point of interest is the extent to which centralized traffic control is now aiding the war transportation.

When war production, military training programs and hostilities developed during 1941, the volume of traffic handled on certain extended single-track lines increased as much as 100 per cent or more. Many of these lines are of strategic importance in that there is no other route over which traffic can be routed readily, or else all available routes are equally crowded. On one single-track section more than 200 miles long, the ton miles handled in February, 1942, were seven times those handled in the same month of 1939. On these lines the need for

increased track capacity has been urgent, but neither time, materials, machinery nor labor were available to construct extended sections of second track. Train delays developed to the stage of congestion, primarily because of the antiquated method of authorizing train movements by time table and train orders.

These conditions existed on hundreds of miles of single-track main lines, such as the 284 miles on the Denver & Rio Grande Western between Dotsero, Colo., and Helper, Utah; 625 miles on the Union Pacific between Salt Lake City, Utah, and Daggett, Cal.; 160 miles on the Louisville & Nashville between Montgomery, Ala., and Mobile, as well as various sections of the Kansas City Southern; the Missouri Pacific; the Seaboard Air Line; the Atchison, Topeka & Santa Fe, and other roads too numerous to mention here.

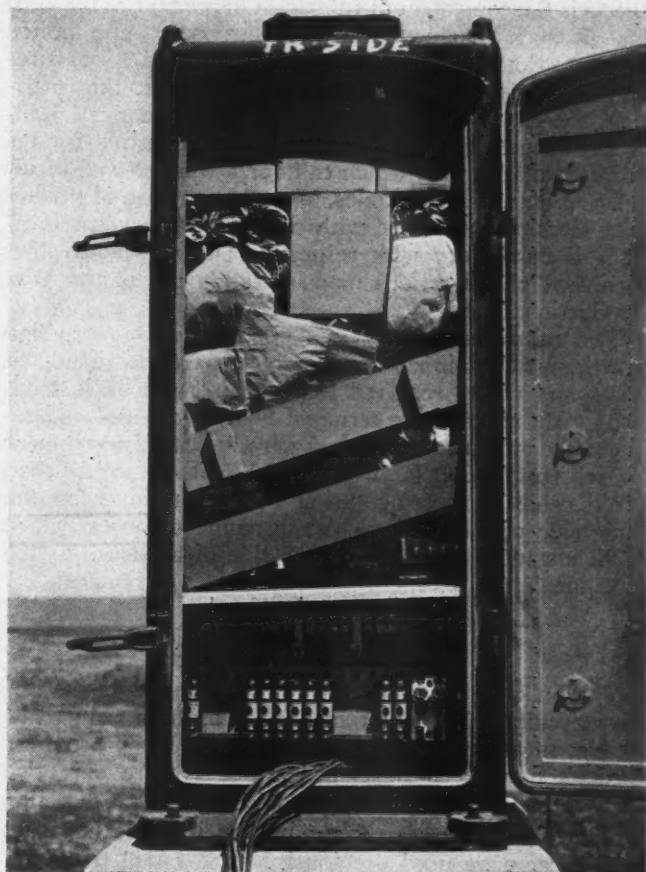
What Could Be Done

Sufficient quantities of rails and fastenings were not available to construct extended sections of second track. On the other hand, the installation of centralized traffic control requires comparatively small quantities of metals and other materials and, furthermore, the construction of such projects can be completed within a few months and thus be of benefit in handling heavy traffic as an aid in the war program now.

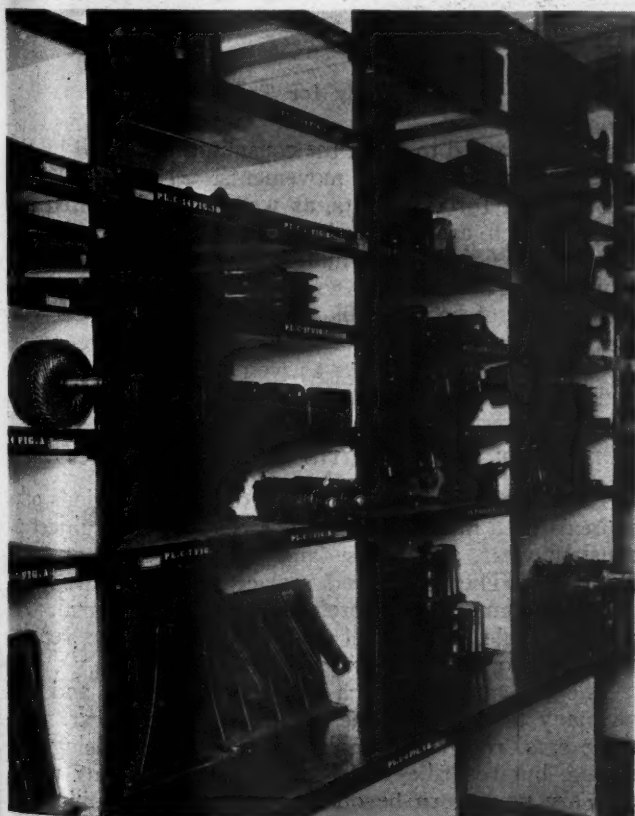
When considering applications for materials, the War Production Board required the railroads to prove that each project was necessary as an aid in war transportation. Furthermore, the Board required the railroads to hold to the minimum the requirements for certain metals, as well as to use substitute materials wherever possible.

On this basis, materials were allocated and construction has progressed rapidly on numerous C. T. C. installations. The 175-mile project between Las Vegas, Nev., and Daggett, Cal., on the Union Pacific was completed

on June 16. The final section of the 107-mile project between Dotsero, Colo., and Grand Junction on the Denver & Rio Grande Western was completed several months ago. Construction is under way on 127 miles more between Agate, Utah, and Helper, and an additional project of 49 miles has been authorized between Grand Junction and Agate. When all three of these projects are completed, C. T. C. will be continuous on 625 miles between Dotsero and Helper. Last year the Louisville & Nashville completed one project on 92 miles of single track between Brentwood, Tenn., and Athens, Ala. It has also completed 64 miles of a 160-mile project between



Cases Are Wired and Shipped With Relays in Place



Signal Materials in Store Room

Montgomery, Ala., and Mobile. The Atchison, Topeka & Santa Fe, the Missouri Pacific, the Seaboard Air Line and numerous other roads are working on C. T. C. projects of various lengths. Counting the projects placed in service in 1942 and in the months of 1943 up to date, as well as those to be completed before the end of this year, more than 2,000 miles of C. T. C. will have been placed in service during the two war years. This total compares with 2,702 miles installed in the entire 15 years of C. T. C. history, from the beginning in 1927 to January 1, 1942.

Means for the Conservation of Materials

On some of the C. T. C. projects, such as on the 171 miles on the Union Pacific between Las Vegas, Nev., and Daggett, Cal., automatic signaling was previously in service, and a minimum number of new signals and line wires were required. The major items of additional new materials included power switch machines, new relays, line coding control equipment, the C. T. C. machine in

the dispatcher's office, and other accessories, such as batteries, rectifiers, etc. On other projects, such as that on the Louisville & Nashville between Brentwood, Tenn., and North Athens, Ala., 91 miles, no automatic signaling was in service previously. Therefore, a complete arrangement of signals and new line circuits were required in addition to the switch machines, C.T.C. control machine, line coding apparatus, etc.

Regardless of whether automatic signaling was in service previously, large quantities of insulated wire and cable are required for the installation of centralized traffic control. The electrical insulation on wires and cables consists of rubber, or material which in one or more respects is the equivalent of rubber. On account of the need for all such products for war purposes, only limited amounts can be allocated for use as insulation on wires and cables for railroad signaling. To meet this situation, the Signal Section, Association of American Railroads, adopted emergency specifications effective for the duration of the war, which call for a thinner wall of insulation on wires and cables, as well as the use of smaller wire sizes. Compliance with these emergency specifications is mandatory with respect to all wires and cables furnished on allocations made by authority of the War Production Board.

The railroads have revised circuits and construction practices to minimize the conductor feet of insulated wires and cables required for certain types of installations. By rearranging terminal boards, one railroad reduced the amount of insulated wire in typical instrument houses from 3,000 ft. to about 2,175 ft. Another road saved cable by locating power switch machines on the same side of the track as the instrument houses, which in all instances are on the same side of the track as the pole line.

Saving Line Wires

The bulk of the wire used for signaling is in the line wire circuits, these requirements having been reduced by various means as an aid in the war production program. Circuits have been developed which require only two wires for the control of signals in either one direction or the other, whereas three wires or in some instances four wires were used previously. The coded track circuit system has been developed rapidly as a means for securing the various controls of signal aspects, all by means of circuits through the rails rather than by track circuits in combination with line circuits.

In the coded line controls for C. T. C. systems, carrier current apparatus has been applied so that controls for two or more sections remote from an office can be handled simultaneously over the same two line wires. In numerous instances, galvanized iron line wire is being installed as a means for saving copper otherwise required for hard-drawn copper line wire. Likewise the use of copper-covered steel wire has been effective in saving large quantities of copper, while at the same time securing increased tensile strength.

Wires and Cables for Replacements

The insulation on insulated wires and cables has a very definite limit of life and should not be continued in service, for reasons of safety, after the insulation resistance tests less than established limits. Under ordinary circumstances, insulated wires and cables in signaling are replaced before reaching their final stages of usefulness,

but under war conditions, new copper wire as well as insulating materials are restricted. For these reasons, the railroads are doing everything within reason to make the existing insulated wires and cables last for the duration of the war. Where the condition of the insulation may result in an unsafe condition that might lead to a false-proceed signal aspect, new wires or cables are required.

Maintenance and Operation

Certain supplies, such as oils and primary battery elements, are consumed in normal operations and must be replaced if the signaling is to be maintained in service. Supplies of this character have been furnished in normal quantities to practically all the railroads, although some difficulty has been encountered in securing the increased



Poles Ready for Treatment

quantities needed to offset the consumption caused by the greater numbers of train movements.

The bond for rail joints, as well as the insulated rail joints, which are required for track circuits, wear in service, depending on the number of trains and the speed, as well as on the efficiency with which the ties are tamped. On account of heavy traffic, and a shortage of track labor, rail bonds and insulated joints are now requiring more attention and repairs as well as replacements than under ordinary circumstances.

Other Repair Parts or Replacements

The signals, relays, circuit controllers and various other items used in signaling and interlocking are subject to constant wear, as well as damage by lightning or train accidents. The repair and replacement parts are comparatively small, and, therefore, require little metal. As a general rule, these small parts for maintenance, repairs and operation are being supplied as required.

The one machine which gets the most wear and tear on many territories is the maintainer's motor car. For these cars, repair and replacement parts are being furnished, but regardless of the best of care, many motor cars are now worn beyond the stage of economical repair, and, therefore, must be replaced with new cars as soon as practicable.

Electrical Departments Getting By

Use of new materials and conservation of old, plus much ingenuity, is meeting present requirements

THE problem of material procurement in the electrical departments resolves itself into three parts: a maximum use of preventive maintenance methods, the use of substitute materials and devices, and the obtaining of such parts and materials as are available. The experience of most roads is that if the first two requirements are met, the supply of maintenance materials is sufficient to keep equipment in operation.

Insulation and Lubrication

"Preventive maintenance" affords the most effective means of anticipating failures and avoiding costly repairs. In the case of insulation it means frequent inspection and regular use of the megger or some other type of instrument for measuring insulation resistance. When a record is kept of variations in insulation resistance, breakdowns can often be prevented by making minor repairs and by taking the machine out of service for dipping and baking. This means that adequate facilities for dipping and baking are of paramount importance. The increased use of Diesel-electric locomotives has found some railroads without sufficient equipment of this kind, but the deficiencies have been successfully filled by new installation or by getting other railroads or manufacturers to do the work. A new and probably better method has been devised by the development of heat-setting synthetic varnishes. These dry or harden quickly and lend themselves readily to drying by means of infrared lamps. The lamps themselves greatly reduce drying time for any type of insulating varnish.

In the present emergency, great emphasis is being placed on the importance of lubrication for electrical machines. The rule is a simple one. Not too little and not too much of the right kind, and many insulation and bearing failures will be avoided. It is to be hoped that much of the pre-war complacency toward these requirements will be permanently overcome. Similarly, close attention to gear lubrication is getting results.

Traction Motors and Generators

Frequent inspection of traction motor commutators is playing an important part in the reduction of repair materials. Since the end away from the commutator is subject to the greatest temperature, there is always the possibility of loose bands on this end. When this is watched carefully, much damage caused by loose coils is avoided.

To the intelligent observer, the condition of the commutator will indicate many things, such as improper brushes, tipped brushes, faulty relay or reverser action, sluggish brakes or improper use of controls by the engineman.

The shortage of repair materials is frequently the result of the difficulty of getting the right parts to the right place at the right time. The manufacturers are effectively aiding this situation by offering special service to the users of Diesel-electric locomotives by maintaining stocks of parts which can be shipped immediately on order. When making such an order the railroad ships the damaged part to the manufacturer, where it is reconditioned and held, ready for the next demand. This is made possible by the fact that many pieces of equipment are standard and can be used on any locomotive of the same type and sometimes on locomotives of different types.

Air-Conditioning

Probably the most important requirement for all electrical apparatus is cleanliness. This applies with particular force in the case of air-conditioning. If air filters, ducts, evaporators and condensers are allowed to become clogged with dirt, the equipment will fail or will not operate properly. Replacement parts can be obtained, but when all the rules of cleanliness are observed, relatively little repair is necessary. It is to be hoped that the advent of women in the shops and yards will aid this situation.

Air filters, like other materials, are hard to procure under the war program, and filters used in return air grilles can be removed on a great number of cars and a fine mesh screen substituted. A better method is to blow out filters frequently with high-pressure air (this applies to those of the expanded metal or wire mesh type), steam them with live steam and apply oil with a spray gun. This procedure is being used effectively to avoid removal of filters for cleaning and is desirable where it can be used, since cars must be kept in service as much as possible.

Evaporators and condensers can be cleaned in place by using high-lift spray guns and proper cleaning solutions. Care must be taken to shield upholstery, paint and equipment which might be damaged. Adequate cleaning insures long life and effective operation and at least for the present much copper and aluminum can be saved by a little extra use of cleaning solution and water.

Vee-Belts

Vee-belts for air-conditioned cars and Diesel-electric locomotives have become an important item on the list of restricted materials. Like other maintenance items they can be obtained, but their conservation is important. Long Vee-belt life is assured when only matched sets are used and certain rules are observed.

A belt-matching machine which measures belt length under operating tension can be made in the railroad shop. Matched sets, whether consisting of old or new belts, should be tied together ready for application as a unit. Other basic rules are: never use a new belt with old ones; never force a belt over a pulley; apply proper tension; avoid overloading; be sure that pulleys are parallel and in line.

The number of types of incandescent lamps has been sharply reduced by government order. This has simplified manufacture and has not materially affected the light-

ing of railroad property. It has increased the importance of maintaining proper voltage at the lamp socket. As in the case of air-conditioning, a fundamental requirement of good illumination and low maintenance is cleanliness and programmed maintenance.

Scheduled Lamp Replacements

When a regular schedule of inspection and cleaning is observed, repairs are reduced and the user gets light in proportion to the power he pays for. Replacing lamps one at a time means a lot of traveling for the maintainer. A practical answer to this is group replacement of lamps. According to this practice, lamps are replaced throughout the system periodically, according to a schedule. All used lamps are brought into the shop for examination, and any considered suitable for further use are set aside for replacement of the early burnouts in the group just installed and for use in less vital and more easily accessible circuits.

This procedure causes a slight increase in the number of lamps used, but it assures better light at lower cost and more of the work is done by the unskilled worker and less by the repairman.

Substitute Solders and Mechanical Connectors

The shortage of tin has necessitated the reduction of the amount of tin used in solder and has resulted in the development of various new solders containing no tin at all. These substitutes are making a fair job of meeting the emergency. Most of them have a melting point higher than that of half-and-half solder and require special skill in handling. If one worker in a group is allowed to experiment for a time he can usually tell the others how to use it.

On the other hand, the shortage of easily used solders is resulting in the development of numerous types of mechanical connectors for wires and cables, many of which are highly satisfactory. The railroads are increasing their use of such connectors and if they are found generally satisfactory for use on cars and locomotives, it seems probable that they will permanently replace many soldered joints.

Wire and Cable

Overloaded electrical conductors have been relieved by raising line voltage, by using some of the thin-walled insulation and by applying capacitors for improving power factor. The latter has been made possible by recent developments in the manufacture of capacitors and they are serving effectively to improve circuit conditions and relieve cable shortage. There is little data available on the service life of the new thin-walled synthetic insulated wires and cables, but they are serving to increase wire and conduit capacity as well as to meet the rubber shortage; their quality seems to assure their continued use.

Overloading of Transformers

Careful calculations made by the manufacturers have determined permissible overloading of transformers. This type of equipment as usually installed has a considerable overload capacity and while the present "permissible" loads may somewhat shorten their life period, it will be sufficient for the duration and the purchase of much new equipment is avoided.

Past railroad practice has called for a motor which was adequate in size. This assured dependability and

allowed a factor of safety which protected errors in calculation on the part of the installer. Now it is important that the motor be no larger than is necessary to avoid excessive use of material and to keep the power factor as high as practicable.

The introduction of new insulating materials has resulted in a reduction in the size of new motors and other electrical apparatus and it is also having a salutary effect in the repair shop. As loads have increased on old machines, particularly in the traction field, they have failed and have had to be rewound. The use of Fiberglas insulating materials for wire and slot insulation has served a double purpose. It permits higher temperatures and hence greater overloads, and since it is thinner than many of the papers and fibers formerly used it allows the use of larger conductors with consequently less heating. The net result is that many old machines are able to carry on.

New Installations

New wiring installations of any considerable proportions are still a real problem and probably will remain so while the war lasts. Bills of material, carefully prepared to conform with present requirements, meet new restrictions while waiting for approval, with the result that the permissible material frequently falls short of meeting local inspection requirements. Although codes are constantly being modified to conform with circumstances, there are limits which should not be exceeded and it is probable that a considerable part of the new wiring now being done will one day have to be done over. Some good will result by showing how practices can be simplified and some of the substitute materials will find permanent application.

* * *

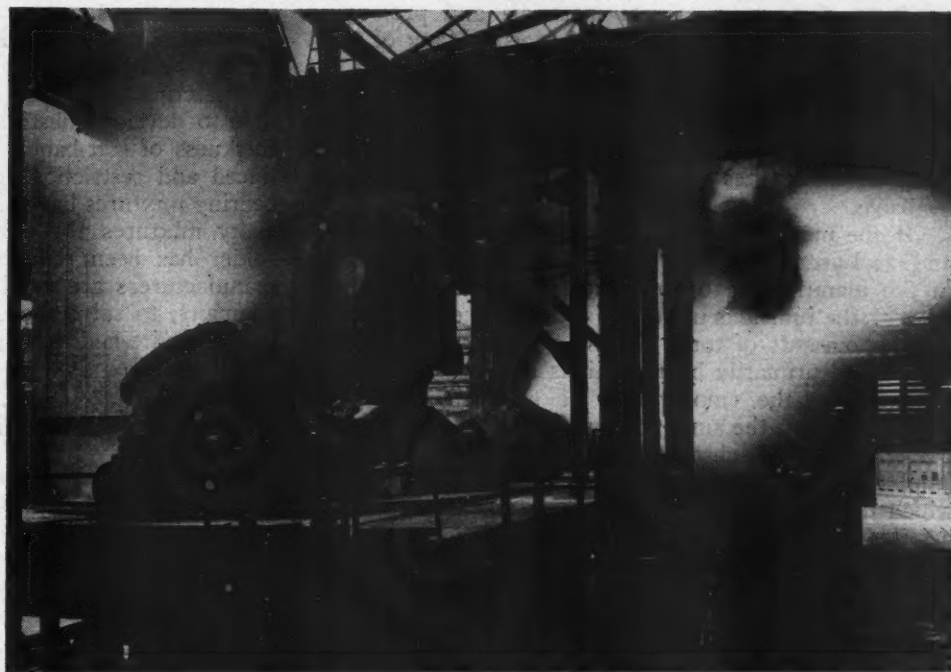


Pantograph Current Collectors for Electric Locomotives Being Checked for Pressure Against the Contact Wire at the Nuttall Works of the Westinghouse Electric & Mfg. Co. in Pittsburgh, Pa.

Supply Companies Handicapped in Meeting Railway Needs

Lack of critical materials and routine of rationing hamper production, delivery of needed products

Bessemer Steel Is Being Substituted for Open-Hearth Steel in Products Made by Railway Supply Companies to Reserve Open-Hearth Furnaces for War Work. In the Photograph of Bessemer Converters in Action at the Gary Works of the Carnegie-Illinois Steel Corporation, Metal in the Vessel on the Left Shows a Flame Typical of the Middle of the Blow While the Flame in the Vessel on the Right Indicates that the Blown Metal is Ready for Pouring.



WAR and its ramifications have created conditions which are materially handicapping the railway supply industry and as a result it is unable to manufacture for the railroads all the products they require. The restrictions placed upon the industry have been so drastic that, in some instances, companies are able to manufacture little or none of their normal peacetime products. The problem of meeting the increased needs of the railroads for materials to overcome the wear and tear of a record traffic has been complicated by the rationing of materials and the diversion of established sources of supply to war production. These challenges are being met, often through a radical recasting of activities.

New sources of supply are being established, substitute materials are being introduced into the products made for the railways to replace those materials taken by the Army and Navy, and ways and means for extending the usefulness of products have been created.

Thus far, the railway supply companies have been able to deliver most of the products needed by the railroads—a real contribution to the war effort—but as the war increases in tempo their ability to manufacture products for the railways will become more difficult under the restrictions of material rationing.

The rationing of materials showed its effect very early in the war when railroad materials, including the products of manufacturers, were given a civilian rather than a war-agency rating. As a result of thus subordi-

nating the needs of the railroads to other procurement agencies, the railroad supply companies began early to experience the greatest difficulty in securing the materials needed to fill orders already in hand. Since January of this year, this difficulty has diminished in regard to some materials and the railroads and the supply companies have had a more direct and sympathetic representation on the War Production Board as a result of the recognition of the Office of Defense Transportation as a claimant agency in handling all requests for allocations of transportation material and equipment, although the railways and those who supply their needs still occupy the status of civilians instead of being recognized as an integral part of the war effort. As a result, they rate a much smaller division of available materials than the Army, the Navy, the Maritime Commission, the Board of Economic Warfare and Lend-Lease operations.

This situation, coupled with the slowness with which requests for priorities are acted upon and the practice of sidetracking, in the manufacturing process, products for domestic railroad use in favor of products of claimant agencies of a higher rating, has materially reduced the ability of the supply companies to make deliveries. As a result it now takes six months for example, to construct a freight car as compared with three months prior to the war.

The handicap under which the supply companies labor is clearly demonstrated in the quantities of materials they are able to deliver to the railroads. Thus, in the



first quarter of 1942, purchases from manufacturers amounted to \$229,972,000 while in the same quarter of 1943, they totaled only \$194,057,000, in the face of an increase of 29.4 per cent in ton-miles of revenue freight handled. If the manufacturers had been able to produce the materials demanded by this heavier traffic, purchases would have been at least \$100,000,000 more than they actually were.

Substituting and Prolonging Life of Products

Confronted with the handicap of rationed materials, the railroad supply companies have done a remarkable job in meeting the needs of the railroads for essential products, conserving critical materials and prolonging the life of existing machines and tools. Many of them have established special departments to devise ways for repairing and prolonging the life of their products so that the purchase of new ones can be avoided while other companies are working with the railroads in the development of substitutes for materials that are no longer available.

Of the metals which the war has made scarce, iron and steel are most widely used by the supply companies in the manufacture of products for the railroads and through the judicious use of these metals they have saved many thousands of tons. These savings have been accomplished primarily by reductions in the weight of the product; by the employment of production methods which cut down the amount of metal required in foundry work; and by the substitution of plastics and wood. Examples of the latter are the wooden or plastic handles which have been developed for tools where solid metal handles were formerly cast or forged; the employment of wood and plastics in the manufacture of boxes and containers; and the use of wood for gutters and downspouts.

In the field of alloy steels, the supply companies have also been able to adjust themselves to the restrictions of war. Here, Bessemer steel is being used as a substitute for open-hearth steel, and quenched and tempered carbon-steel are being substituted for alloy steels.

By substituting induction-hardened steel for nickel and nickel-chromium steels, one company reduced its annual consumption of nickel from 450 tons in 1941 to 200 tons in 1942, and its consumption in 1942 would have been 600 tons on the basis of 1941 practices. In one design of tractor alone, 50 tons of nickel per year went into the final drive gears prior to 1942 while these gears are today made of induction-hardened carbon steel which has no appreciable nickel content. In addition, a new air-blast method of quenching now makes it possible for this company to use plain carbon steel instead of chrome-vanadium steel in tractor sprocket hubs and steering clutch flanges, while carbon-manganese steel is being used by this company in place of carbon-chromium steel in crankshafts.

Copper and Tin

One of the most critical materials used by the railway supply companies is copper, the scarcity of which is due to the heavy demand of war products. In the case of this material, as in others, the supply companies have made substitutions which have greatly reduced the amount of copper used. One company is using malleable iron wire in place of copper wire in telephone and telegraph work; manufacturers of cases for meters and gages and valves are using cast iron and steel in place of brass and bronze; one company is equipped to fabri-

cate a steel locomotive bell should it become necessary to replace existing bronze bells; and manufacturers of brass and bronze bearings have not only reduced the copper content but are using an iron or steel backing which reduces the amount of bronze needed. In shoes and wedges for locomotive driving boxes, malleable iron faced with bronze bearing surfaces is being substituted for solid bronze castings; grey iron bushings are being substituted for bronze in certain classes of power; copper pipe and tubing are being replaced with steel and wrought iron; and higher lead content bronzes are being substituted for bronze locomotive driving-axle bearings, with savings in the tin and copper requirements. A single company is saving about 700 tons of copper a year by substitutions.

When shipments of tin from the Far East were shut off, tin became even more critical than copper but again manufacturers of products used by the railroads were able to develop substitutions. The tin content and the thickness of soft-babbitt journal bearings have been reduced and restrictions on the percentage of tin in tin-bearing mixtures have resulted in the use of low-tin specialty mixtures for other bearing metals. The tin in solder has been reduced and at the same time many manufacturers are making or using silver solder. One company, to solve the solder problem, has developed a line of wire-end terminal lugs which are applied by pressing rather than by soldering.

Other Metals

Nickel, aluminum, chromium, magnesium and tungsten are among other metals which are no longer available in quantities to railway supply manufacturers and here, again, the companies have been able to keep the railroads in operation by developing substitute products. However, the substitution of non-critical materials for critical ones has created problems in production because many of the substitutes will not machine as well as the critical materials. This is especially true of the substitutes for aluminum.

Carbon steel gears are being substituted for nickel alloy gears; chromium plating has been abandoned and iron and steel are being used in place of aluminum. As a result of substitution or the discontinuance of the use of these metals, one tractor manufacturer is saving 250 tons of nickel and 100 tons of aluminum used in its designs and an electrical manufacturer is saving 175 tons of aluminum a year. A manufacturer of floodlighting projectors has developed a model in which all parts made heretofore of aluminum, brass or other non-ferrous metals are replaced by steel or cast-iron, especially treated by porcelain enameling and other rust-proofing. Another company substitutes materials ranging from low alloy steel to structural steel for aluminum frame members in its rail motor cars; it also uses a light-weight, heat-treated alloy iron piston and a light-weight steel connecting rod instead of aluminum. Aluminum wheel guards have been replaced with pressed steel guards, aluminum water jackets with pressed steel and welded construction, and aluminum idler pulleys with iron and steel.

An electrical manufacturer is saving 6,000,000 lb. of aluminum in meter production, 550,000 lb. in industrial control gears, 200,000 lb. in lightning protective devices and 165,000 lb. in switch-gear construction. The largest reduction made by this company in the use of aluminum have been in structural members, enclosing cases, cast aluminum bases and bearing brackets. About 70,000 lb. of aluminum formerly used in aluminum paint and

as sheet stock for nameplates have been replaced by a gray lacquer and zinc.

Rubber

Rubber is another scarce item but here the supply companies have again protected the supply and by reducing their demands and by devising substitute construction have made it possible for the railroads to secure the products necessary for their operations. In several items, such as air-brake hose, reclaimed rubber is being used rather than new rubber, while rubber has been eliminated in about 100 items. One company has developed a plastic storage battery retainer which eliminates the use of rubber. Another company has cut down the crude rubber content of the tires used on its scrapers and thereby effected a saving of 500,000 lb. of rubber a year. Companies employing rubber latex to increase the adhesive qualities of soft lubricating greases so that they will not be thrown out of revolving parts or loosely fitting bearings, have not only been confronted with the loss of the latex but have been deprived of petroleum derivatives of similar characteristics since they have been diverted to the production of synthetic rubber.

Paints

In the field of paints, many materials are no longer available and others have been substituted. Aluminum and bronze are no longer available for lacquers but other finishes have been developed by the manufacturers. The cutting off of imports of China-wood oil, the small amount produced in this country and the freezing for military use of such stocks as are available, have forced paint manufacturers to resort to substitutes. Perilla oil, although equally scarce, and dehydrated castor oil have been found to be fair substitutes. Alkyd paints and enamels were used as substitutes for the China-wood oil finishes but when the government froze, for the manufacture of explosives, a derivative of pythallic anhydride, one of the basic raw materials from which synthetic resins are made, it became impossible to secure alkyd paints and enamels. Zinc chromate, which is made from ore from the Philippines, used in paint pigments, is another product for which substitution has been made.

One of the greatest aids to manufacturers in meeting

the railroads' needs has been the development of plastics to replace rubber, iron and steel and other metals and materials needed for war. Although their extensive use has been limited by structural strength, manufacturers have found many ways of employing plastics in their products. A tool company has developed a plastic housing for its portable electric drills, the design being such that the plastic housing does not support any operating parts of the drill but serves only as a protective shell for the unit. Another company is using plastics for the timer block, carburetor check valves and differential axle connectors of its internal combustion engine. Among the many other items in which plastics have been substituted are tool handles, cases, battery cases, cabinet handles and toilet fixtures.

Supply Companies Need More Materials

Ever since the war began, the major objective of the railway supply companies has been to aid the war effort by so utilizing their facilities, personnel and ingenuity as to enable them to keep the railroads supplied with the products that are needed to make possible their uninterrupted operation and movement of war traffic. So vital are the products of the railway supply companies to the continuous operation of the railroads that the inability to manufacture one product might stop all the railroads of the country. Without brake shoes, which frequently have to be replaced after one trip, cars could not operate; and without materials essential to signal operation and track maintenance trains could not operate.

Thus far, the railway supply companies have been able to cope with the handicap of material rationing but as the needs for new equipment and repair parts become more acute with the increasing strain on railroad equipment resulting from continuous operation under heavy traffic, the supply companies will not be able to manufacture sufficient quantities of the needed products unless larger portions of materials are allotted to them. Locomotive and car construction have not kept pace with normal retirements and obsolescence, equipment and track maintenance have not been adjusted to the wear and tear of high-tempo operation and the program of the railroads for locomotive and car construction and for roadway maintenance deemed essential to the war effort has fallen far short of its goal.

* * *



Piles of Materials Recovered from Scrap for Re-use and Reclamation

Briefs Are Filed in Op Wage Case

Carriers contend that "Little Steel" increases are already in effect—No valid pretext exists for further wage rise

THE railroads on July 21 filed their brief with the Stacy-Sharfman-Swacker emergency board which has been hearing in New York the plea of the operating unions for a \$3-per-"day" wage increase. The union brief was, presumably, filed on the same date—but, up to press time on this issue of *Railway Age*, the union attorneys had not been able to make their presentation available for publication.

The railroads' review of their case was signed by H. A. Enochs for the Eastern roads, J. B. Parrish for the Southeastern lines, and D. P. Loomis for the Western carriers; and by Attorneys J. Aronson, W. T. Joyner, H. L. Filer, B. E. Dwinell, G. R. James, J. P. Hamilton, and F. D. McCarthy.

The Issue Before the Board

The carriers' brief is really brief—only 33 printed pages, but it neglects no important facts. It recites the law (Railway Labor Act and the Stabilization Act of October 2, 1942) upon which the board's authority for weighing the case rests and states that the "ultimate and controlling issue, upon which a finding is to be made, is whether an increase in wage rates should be granted, in view of the stabilization program established by the Act of October 2, 1942, and subsequent executive action." The brief then enters upon a review of the facts as presented in the testimony.

There are, says the brief, "some 300,000 train and engine service employees involved in this proceeding, about 23 per cent of all the employees on all Class I railways in the United States." Some of these employees are paid on an hourly basis and some on a "dual" basis, the brief carefully explains, showing how employees paid on the latter basis are often compensated for 45 or more "basic days" in a month, while actually working as few as 10 actual calendar days. Testimony of New York Central Vice-President L. W. Horning on this little-understood question is quoted wherein, among other things, he said:

"The dual basis of pay means that if average train speed exceeds 12½ miles an hour in freight service and 20 miles an hour in through passenger service, the employee runs his basic day's mileage in less than the number of hours regarded as a basic work-day. Thus the number of hours on duty decreases, while the average hourly earnings increase. On the other hand, if train speed falls below these averages, the employee (provided he is on duty more than the number of hours in a basic day) receives overtime pay."

How this "dual basis" works out in actual practice is made known by two specific instances, viz.:

"A concrete illustration is that of a particular engineer in through passenger service between New York and Washington on the Pennsylvania Railroad. The mileage per trip is 231.7 miles and within a 24-hour period the engineer runs from New York to Washington and back again. In this case he would be paid for 463.4 miles, or about 4⅔ days' pay for work performed in a 24-hour period (Carriers' Exhibit No. 3). By working 10 round

trips in the month, this engineer makes the equivalent of about 46 days' basic pay.

"Another example of the difference between a calendar day and a railroad day in connection with the method in which these employees are paid is that of a freight train on the Illinois Central Railroad which runs from North Cairo to Memphis (Carriers' Exhibit No. 4). The basic daily rate of the engineer is \$9.25, but he earns \$16.47 for the trip of 178 miles, and his total time on duty is 7 hours and 15 minutes."

Annual average earnings in 1942 of employees involved in this proceeding are given in an accompanying table, in which the brief quotes from a carriers' exhibit.

Average Annual Earnings—Year 1942

ROAD ENGINEMEN AND TRAINMEN			
Passenger conductors	\$3,918	Passenger engineers & motormen	\$4,290
Freight conductors—through	3,572	Freight engineers & motormen—through	3,939
Freight conductors—local	4,228	Freight engineers and motormen—local	4,848
Ass't passenger conductors and ticket collectors	3,096	Passenger firemen & helpers	3,379
Passenger baggagemen	2,982	Freight firemen & helpers—through	2,790
Passenger brakemen & flagmen	2,900	Freight firemen & helpers—local	3,562
Freight brakemen & flagmen—through	2,602		
Freight brakemen & flagmen—local	3,207		
YARD ENGINEMEN AND TRAINMEN, SWITCHTENDERS, AND HOSTLERS			
Yard conductors & foremen	\$3,117	Yard firemen & helpers	\$2,352
Yard brakemen & helpers	2,526	Outside hostlers	3,166
Switchtenders	2,253	Inside hostlers	2,608
Yard engineers & motormen	3,180	Outside hostler helpers	2,673

The average annual earnings of all train and engine service employees in 1942, the brief goes on to say, were \$3,088, and in 1941 were \$2,762. The difference between I. C. C. wage statistics and those of the Railroad Retirement Board is carefully explained. It is pointed out that the Retirement Board reports annual earnings of employees who did some work in each of the twelve months of 1941 at \$2,633, "and the Railroad Retirement Board figures do not include earnings of any individual in excess of \$300 in any one month. The Railroad Retirement Board figures of average annual earnings might be said to be calculated on the basis of a census of names. This method is not as reliable as that of the Interstate Commerce Commission where the mid-month count is used. One position may be filled during the course of a year by three men. Using the Retirement Board method, the combined wages of the three employees are divided by three to get the annual average wage. It is obvious that the use of such a method does not produce an accurate annual average wage of employees."

Earnings Over \$300 Per Month

Attention is drawn to high monthly earnings by several classes of employees involved in this proceeding—in March, 1943, over 61 per cent of the passenger conductors and over 60 per cent of freight conductors earned \$300 or more. Passenger engineers earning more than \$300 were 82 per cent of the total, and almost 79 per cent of all freight engineers were also in this high bracket. The brief draws attention to the attempt, in union testimony, to identify straight-time hourly rates with hourly



earnings—when, as a matter of fact, since road employees are paid by the mile rather than by the hour, hourly earnings greatly exceed basic hourly rates. Actual hourly earnings are shown in an accompanying table.

Straight Time Hourly Earnings—Year 1942

ROAD ENGINEMEN AND TRAINMEN

Passenger conductors	180.6¢	Passenger engineers & motor-	men	227.3¢
Freight conductors—through	133.4	Freight engineers & motor-	men—through	155.3
Freight conductors—local	115.1	Freight engineers & motor-	men—local	132.1
Ass't passenger conductors		Passenger firemen & helpers	188.8	
& ticket collectors	143.7	Freight firemen & helpers—	through	123.0
Passenger baggagemen	140.8	Freight firemen & helpers—	local	103.6
Passenger brakemen & flag-				
men	140.1			
Freight brakemen & flagmen				
—through	110.0			
Freight brakemen & flagmen				
—local	94.5			

YARD ENGINEMEN AND TRAINMEN, SWITCHTENDERS, AND HOSTLERS

Yard conductors & foremen	109.1¢	Yard firemen & helpers	91.9¢
Yard brakemen & helpers	101.7	Outside hostlers	93.7
Switchtenders	79.6	Inside hostlers	85.8
Yard engineers & motormen	114.4	Outside hostler helpers	78.3

Because of the dual basis of pay, the brief points out that "any increase in the basic wage rates of road service employees actually gives them a much larger increase in hourly earnings. On October 1, 1937, engine and train service employees received an increase in their basic daily rates of 44 cents. This represented an increase of 5.80 cents in the hourly equivalent of the daily basic rate. The increase of 5.80 cents per hour had the effect of increasing the hourly earnings of road service employees 7.60 cents per hour. Similarly, the increase of 76 cents per day, effective December 1, 1941, resulted in an increase of 21.48 cents in the straight time hourly earnings of road passenger engineers and firemen; 16.21 cents in the straight time hourly earnings of road passenger conductors and trainmen; and 11.80 cents in the straight time hourly earnings of road freight service employees."

The railroads contend in their presentation that their present favorable earnings cannot be considered permanent, and cite several opinions by the Interstate Commerce Commission and the Supreme Court to substantiate this view. They state that total financing of additions, betterments and debt payments in 1941 was \$805 millions and, in 1942, \$965 millions—73 per cent of which was paid out of current funds in 1941 and 79 per cent out of current funds in 1942. Railroad freight rates have recently been reduced by \$300 million annually, and carrier property is currently undermaintained because of the scarcity of materials. All these facts are cited by the carriers to indicate that their "ability to pay" is not as large as might be casually assumed from an uncritical examination of their recent published earnings statements.

Far Above Other Industries' Pay

As to a comparison of wages of employees in this proceeding with those of workers in other industries, the brief points out that "the weekly earnings of transportation train and engine employees averaged \$61.35 per week in December, 1942—\$21.08 above the average weekly earnings of all manufacturing wage workers. The spread in 1932 was \$20.95; in 1936 the spread was \$22.51; and in 1940 it was \$23.98." Some reduction in the excess of railroad hourly earnings over those of employees in other industries is admitted—but this is attributed to the introduction of unions into these other industries, and to the necessity for securing a large volume of new employees in war industries. The brief then proceeds to observe:

"The employees in this case have pointed with pride to the differentials that existed between their wages and those of employees in outside industries in the years

past. Although the spread between the hourly earnings of train and engine service employees and the manufacturing wage workers has narrowed to some extent lately for the reasons stated, it does not follow that an injustice has been done the transportation employees. The spread referred to earned for these employees the title of 'aristocrats of labor.' That employees in other lines have made gainful advances takes nothing away from the transportation employees. The parable of the vineyard, wherein certain laborers caught up in their wage rates with those who had labored longer, was recited more than 2,000 years ago. It was there made clear that no injustice had been done. Similarly, no injustice or unfair treatment has been accorded the employees herein involved."

What the "Hold-the-Line" Order Says

The brief outlines, point by point, the development of the government's anti-inflation policy. It quotes Executive Order No. 9328, issued on April 8, 1943, directing boards such as the one hearing this case:

"to authorize no further increase in wages or salaries except such as are closely necessary to correct substandards of living, provided that nothing herein shall be construed to prevent such agencies from making such wage or salary readjustments as may be deemed appropriate and may not have heretofore been made to compensate, in accordance with the Little Steel Formula as heretofore defined by the National War Labor Board for the rise in the cost of living between January 1, 1941, and May 1, 1942."

The foregoing is what is known as the "hold-the-line" order, and the brief cites the evidence in detail to support its contention that the wage increase sought by the transportation unions would violate this order. Clearly, it is argued, these employees are not suffering from "substandards of living." War Labor Board cases are cited to show that the "Little Steel Formula" is "not applicable to individual workers or to employees in particular job classifications"—but only to an industry as a whole; and "all railroad employees considered as a whole have received approximately a 15 per cent increase in wage rates since January 1, 1941"—i. e., the Little Steel Formula has already been applied to the railroads.

The carriers in their brief sift the evidence which might seem to justify a wage increase as "aid in the effective prosecution of the war" and find none of any weight. Similar lack of conviction is found in the possibility that current wages need enlarging in order to "correct gross inequities."

No reasons having been found for exceptions to the "hold-the-line" wage order, the carriers summarize their case against a wage increase as follows:

"The record in this case shows that the employees here seeking an increase are the highest paid men in the industry. The method of determining the pay of many of them results in the pyramiding of their compensation. They enjoy many advantages over employees in outside industries, such as, seniority, greater opportunity for advancement, and greater social security benefits. Due to various factors, including increased unionization of outside industry, suction rates, and development of war industries, the favorable spread between the hourly earnings of transportation employees and those in outside industries heretofore existing has been narrowed in some instances. Nevertheless the transportation employees' average weekly earnings are more than \$20 higher than the average weekly earnings of all manufacturing wage workers. More than 25 per cent of the employees herein

represented received more than \$300 as their compensation per month for March and April, 1943. The average for all the train and engine service employees for the year 1942 was \$3,088.

"It is to these relatively high earners, not the lower paid men in the industry, that this Board is called upon to apply the stabilization policy. The testimony shows that rate increases regularly follow wage increases. Railroad employees are domiciled in practically every county in the United States. To grant an increase here would likely start another cycle of wage increases which in turn would increase the difficulty of stabilizing the cost of living and cause the spiral of inflation to ascend. The Stabilization Act, the Orders and Directives thereunder, leave for this Board only the determination of the questions, do gross inequities exist, and may an increase be granted under the Little Steel Formula? Executive Order No. 9328 requires that if the Little Steel Formula is to be considered, it is to be treated in accordance with the definition of the formula by the War Labor Board. The decisions of that Board constitute threads which have been woven into a clear, definite, industry-wide pattern. Construed on such a basis, approximately the 15 per cent permissible increase has heretofore been granted and no further increase can consistently be awarded. No gross inequities have been shown to exist."

As the Hearing Closed

Discussing the application of the Little Steel formula, in his summation at the close of the hearing, Attorney Aronson said the carrier position was precisely the same as it had been in the non-operating wage case, namely, that highly paid employees should not receive substantial wage increases. The carriers consider employees as a whole to have received a 15 per cent increase since 1941. For every hour all roadmen in engine and train service now work there is an over-all money increase average of 13 cents, and if speeds today were faster the figure would be somewhat higher, Mr. Aronson explained, adding that all employees before this board, including the yardmen, are averaging 12 cents plus more per hour.

In considering the application of the Little Steel formula, he described the men before this hearing as the highest paid group in the railroad industry, and asked that the "sound words of the President of the United States" in his "hold-the-line" statement in April, 1943, be remembered. "I think we have a high, serious and patriotic duty to give full faith to that statement of the President of the United States, and not try to circumvent the stabilization policy as established by law."

Mr. Aronson took exception to the declaration of Union Counsel Edward J. Flynn, who in summing up the case for the unions, suggested the railroads were setting up reserves against the future, but were making no provision for employees who were unable to lay aside their own store against the depression the carriers predict will occur. "That is hardly the fact," contended the carrier counsel, and he made what he called a "flat-footed statement," to the effect the carriers are setting up more reserves to protect employment than any other industry. "While it is interesting rhetorically to state no reserve is being paid for men," Mr. Aronson pointed to the 3½ per cent, which the railroad contributes to retirement pensions, as well as another 3 per cent in unemployment insurance, the employee paying nothing in the latter instance.

Counsel concurred with Mr. Flynn that railroad traf-

fic has increased since 1941. Asserting he had no desire to do any "flag waving," he did venture "it doesn't behoove any of us to complain that we are working somewhat harder during this period of war."

Judge Stacy asked Mr. Aronson to "assume the question of sub-standard wages is out of the case, and supposing we agree with you in the interpretation of the Little Steel formula, what else is left in this case?"

"If there be any gross inequities, those are left," answered the counsel, though he explained he did not consider there were any.

C. A. Miller, vice-president and general counsel, American Short Line Railroad Association, likened his position before this particular emergency board to the quotation, "To be vanquished and not surrender is to achieve victory." Referring to the Sharfman and Stacy boards, he stated he had been "vanquished by two members of this board, but I still haven't surrendered." He expressed some doubt as to whether this war is worth winning, if, to maintain their interest in the successful culmination of this struggle, employees must be "kept happy" through increased wages. And after what he termed a "fair review of the record," he did not believe there was any ground for granting employees a basic wage increase.

Counsel Miller declared the ability of a road to pay a wage increase should be given suitable consideration. If the board should decide a wage increase can and shall be granted under the stabilization program, then it should also determine each road's ability to pay and to what extent the wage increase shall be applied to each. As to the group he represented, Mr. Miller asked that "very serious consideration" be given to the financial status of the Wichita Falls & Southern, the Georgia & Florida, Missouri & Arkansas, New York, Ontario & Western, Port Utilities Commission of South Carolina, Atlantic & Yadkin, Danville & Western, East Erie Commercial, Fonda, Johnstown & Gloversville and the Yadkin Railway. If emergency boards continue to order roads to pay the same wage increases, he prophesied these roads would be put out of business.

Speaking of most short lines, Mr. Miller stressed employment requirements to be less strict than on Class I roads, and said that most of the employees living in smaller communities encountered less high-living cost than on the larger lines, and little, if any, away-from-home expense. Mr. Swacker pointed out that in the case of the New York, Ontario & Western this would not necessarily be true.

As a group, said Mr. Miller, the short lines have come within 1½ per cent of the Little Steel formula, and some have exceeded it.

Says "Stabilize" Means "Equalize"

Joseph E. O'Grady, associate of Mr. Flynn, disagreed with Mr. Aronson's interpretation of the Stabilization Act. It is his thought that this act does not "freeze" wages. In other industries, he said, decisions have been handed down granting increases beyond the 15 per cent basing them on what other industries are getting. Wage comparisons should not be made within the railroad industry, but rather, he told the board, "in equity and justice here, you must compare increases received by these employees in this industry with the increases that have been received by employees in other industries as a whole." He said: "I interpret stabilization to include the equalizing of wages."

Communications and Books . . .

Tank Car Repairs An Essential Industry

WASHINGTON, D. C.

TO THE EDITOR:

I was interested in reading an editorial in the June 19 issue of *Railway Age*, under the caption, Tank Car Owners Need Their Mechanics. The situation described in that editorial is one of which we have been cognizant for some time and have been working with the War Manpower Commission in an attempt to clarify this situation.

The purpose of this letter is to report that the War Manpower Commission's Committee on Essential Activities has declared that it was its intention to include tank car operations as essential, whether conducted by a railroad company, a private tank car company, or a shipper.

The formal action of the committee, as transmitted to this office in a letter from William Haber, director, Bureau of Program Requirements, War Manpower Commission, involves the titles "Railroad-car service" and "Railroad-car rental" as found in Activity and Occupation Bulletin No. 26-3. The committee declared that these titles include the following operations on railroad cars as essential activities, regardless of the type of car (tank car, refrigerated car, etc.) and regardless of whether the operation is performed by a railroad company, private car company, or shipper who owns and uses his own cars: "distribution of cars, maintenance, repair, cleaning, heating, icing, or ventilating service."

I trust that this clarification of the status of tank car companies answers the various questions raised. It appears to me that this action leaves no doubt that tank car companies are considered as engaged in an "essential activity."

OTTO S. BEYER,

Director, Division of Transport Personnel,
Office of Defense Transportation.

Sees Unemployment Ended by Short Work-Week

MALONE, N. Y.

TO THE EDITOR:

I have read your article in the May 29 *Railway Age* entitled "How to Preserve Free Enterprise." It combines the philosophical teachings of Plato, Adam Smith, George et al., with a great deal of original thought applicable only to modern times, making it, on the whole, very understandable, instructive and interesting.

However, I find no reference to what seems to me a very simple formula for increasing employment by private industry and that is reducing hours of daily and weekly labor. There is no more doubt in my mind that millions would find employment by establishing the six-hour day and 5-day week than there is that this machine age has been the cause of millions being unemployed. In many cases the machines have lightened the labor so as to permit the employment of women and adolescents in place of men and in other cases have dispensed outright with the need for manual labor of any description.

I believe with Justice Holmes that, under our present governmental system, labor combinations will continue strong as a necessary counterpart to combinations of wealth and should not be lightly discounted in any post-war policies for protection of private enterprise. Doubtless, some gross inequalities in wages have resulted from strong union combinations but, generally speaking, cost of living seems to be geared to income of the average 8-hour-a-day laborer.

The exaggerated wages paid are the result of overtime at time-and-one-half and double-time rates which the six-hour day and 5-day week without overtime would partially offset.

It is a big subject calling for deep thought and foresight by

those delegated to solve the problem but, as your article so aptly stated, must be solved by industry to prevent further socialistic tendencies by the government.

Another subject which calls for deep study is the concentration of much of the country's business in the hands of great corporations. There is no escaping the fact that gradually but inexorably the big corporation is eliminating the little businessman and he in turn is turning to the government for a job. Naturally, he favors government regulation and intervention of all sorts—the more regulation, the more jobs. For instance, in this town of 10,000 people, we have at least ten stores, unknown a generation ago, controlled by corporations of national or state-wide scope, not to mention the recent acquisition of our newspaper by the Gannett interests.

I hope I have succeeded in pointing out that industry has not only labor in the strict sense to contend with but also a large element composed of middle-class little businessmen and college graduates who, statistics will prove, are turning to the government for jobs.

It is a vast problem which industry has to face and I think that recognition of the whole problem in its varied aspects is half the solution.

In conclusion, I cannot see what difference it would make if our economy were based on a three-dollar or a five-dollar day for the average worker, provided purchasing power remained the same, production and consumption fairly equalized and profits regulated accordingly. Of course, no intelligent person would consider dispensing with our unprecedented technological gains to create a synthetic prosperity and, on the other hand, that same person knows that a utopia to be enjoyed by everyone without distinction is quite impossible. So, we must choose a middle course and see that all of our people are employed in some capacity—however small.

I am a strong believer in the right of individuals, with a few monopolistic exceptions, to compete for the fruits of the earth free from unnecessary governmental interference and have faith in the ability of industrial leaders to solve our business problems and maintain that right in its most vigorous state.

WILLIAM A. CLARK, LL.B.,

Clerk-Telegrapher, N. Y. C. R. R.

Keep Journal Boxes Closed

CHICAGO

TO THE EDITOR:

Your editorial in the June 26 issue about hot boxes interests me. I am not surprised that hot boxes are costly and that you have found them a worthy subject of comment.

I ride a steam suburban train daily and, of course, pass through various freight yards on my 12-mile ride to town. In these yards are organizations of several railroads, all taking care of the necessary servicing work in connection with the movement of cars. All of the railroads now have a practice in connection with the servicing of journal packing which, I am sure, is very detrimental and which aggravates the hot box problem, and that is:

Long lines of cars stand on track every day with all the boxes open, exposed to dust and dirt, cinders, etc. Passing traffic continually agitates this dust and any bearing exposed to such an atmosphere for even five minutes is coated with the equivalent of grinding compound.

Surely some way can be found to close the boxes at once, instead of leaving them open for long periods of time. If the car inspector leaves the box open to indicate that repacking is necessary, it seems equal results could be secured from a chalk mark, as is done with other kinds of information he notes.

Every time I see an open journal box I think of how it feels to have a cinder in my eye. Let us start a campaign to "keep them closed" and stop hot boxes at the source.

TRAVELER.

New Book . . .

Proceedings of the American Railway Engineering Association for 1943. 732 pages, 6 in. by 9 in. Bound in cloth or half Morocco. Published by the Association, 59 East Van Buren street, Chicago. Price—cloth \$8, half Morocco, \$9.

This volume contains the complete record of the activities of the association for the year ending in March, 1943, and includes the reports of the 25 standing and special committees and the discussion of the reports, which was carried on by mail (because the annual convention was not held this year). Also included in the volume are two monographs: Pile Tests Point to Limitations of Current Specifications for Bearing Power, by Roscoe Owen, construction engineer, Missouri Pacific Lines, Houston, Tex., and Stress Measurements in the Web of Rail, by G. M. Magee and E. E. Cress, research engineer and assistant engineer of tests, respectively, Engineering Division, A. A. R.

The great diversity of subjects, 130 in number by the reports include the latest information, particularly with respect to war-time conditions and problems, in practically every phase of railway engineering and maintenance; many problems of operation, especially as operation is affected by facilities; and numerous studies and discussions of the economics of railway location, maintenance and operation. In addition, this volume contains the emergency provisions or specifications for rail, joint bars, track bolts, spring washers, tie plates, track spikes, steel railway bridges, Portland cement, membrane waterproofing and structural steel for buildings, which were adopted in view of war-time conditions.

Because of its wide scope, this volume is of value equally to maintenance, engineering and operating officers, and par-

ticularly so in these critical times when the railways are handling the most important and greatest volume of traffic in their history. Substantially all of the reports represent the results of several years' intensive work by the respective committees, and it is this thorough study on the part of the committees that has given the proceedings of this association the high rank that they hold in engineering literature.

Obviously it is not possible to mention in detail all of the reports and subjects covered. Among the outstanding features, however, one report presents the results of field studies on impact on short span steel bridges, comparing ballast deck and open deck bridges, the effect with battered joints near the center of the span, compared to continuous rail and the effect with various speeds of locomotives. Another discusses roadway construction and protection and ballast specifications and tests; still another presents data on the purchases of controlled cooled and Brunorized rail, the results of field tests on the cause and prevention of rail battering and the results of investigations on joint failures and the cause of shelly spots and head checks in rail; a fourth recommends a practice for consolidating foundation soils by pressure grouting; others present a discussion on the effect of volume of traffic on railway operating expenses; increasing labor supply to overcome acute shortages; and various phases of the problems of the college man in railway service. Other valuable information presented includes a description of the characteristics of modern refrigerating systems; fastenings for continuous welded rail; tests on welding manganese castings in special trackwork; types of water recommended for Diesel locomotives and for air conditioning units, and safety devices for work equipment. Among the important features of the proceedings are statistical data for the previous year on rail failures, crosstie renewals, crosstie service records and the Ninth progress report of the joint investigation of fissures in railroad rails.

Flood Troubles in an Alluvial Valley



Photo Marshall (Mo.) Democrat-News

A Shoo-Fly 2,500 Feet Long

When the flooded Missouri River overtopped the Alton's embankment near Glasgow, Mo., on June 21, it did not stop with washing the fill away, but left a hole 60 ft. deep. When the waters subsided, the Alton solved the problem, tempor-

arily, by a long shoo-fly (to left in picture). The troublesome river flows just beyond the trees to the left. Service under slow orders was resumed June 29—with a lot of work still to do before all damage is made good.

Railroads-in-War News

Vinson Cuts One More Wage Award

Trims 10 cents off proposed hourly increase for P.E. train crews

Modifying the report of a National Railway Labor Panel emergency board, Economic Stabilization Director Fred M. Vinson has cut the pending wage increase for Pacific Electric passenger motormen and conductors from 13 cents an hour to three cents. At the same time he has "not disapproved" the increases which the board recommended for switchtenders, general yardmasters, and yardmasters.

Mr. Vinson's action came in an order and opinion dated July 19, a previous order of his having extended for 30 days his time limit which would otherwise have expired on June 20, i.e., 30 days after the emergency board report was presented to the President. The report, reviewed in the *Railway Age* of May 29, page 1108, was made public by the White House on May 21. Members of the board were Chairman James H. Wolfe, Gordon S. Watkins, and Frank P. Douglass. Under its recommendations, P. E. conductors and brakemen in all classes of service would have got the 13-cent increase, those in double-track local and interurban service going up from 77 cents an hour to 90 cents, those in single-track operation from 82 cents to 95 cents, and one-man car operators from 87 cents to \$1. Under the Vinson opinion, they will all get three-cent raises—to 80 cents, 85 cents and 90 cents, respectively. The increases would be retroactive to January 1, as the board recommended.

The OES director acted because of his view that wages of the P. E. motormen and conductors should be the same as those of like employees of the Los Angeles Electric Railway. While the P. E. proceeding was pending, the Los Angeles Electric applied to the National War Labor Board for authority to increase wages of its motormen and conductors five cents per hour. This application was revised to ask for approval of a 10-cent increase after the emergency-board recommendations for the 13-cent P. E. increase were made public.

Taking the scale for double-track local and interurban service as the key rate, Mr. Vinson broke down the recommended 13-cent increase as follows: (1) Three cents to bring P. E. up to Los Angeles, 77 cents to 80 cents; (2) three cents to give P. E. a favorable differential over Los Angeles, 80 cents to 83 cents; (3) five cents to balance the proposed increase on

the Los Angeles, 83 to 88 cents; (4) two cents to narrow further the difference in rates between freight and passenger service on the P. E.

"The first step," he said, "is sound. The last three steps cannot be justified." With respect to (2), Mr. Vinson said that the effort to justify such a differential ran into a record which showed that the differential has fluctuated between the two companies. Likewise, the differential between the P. E.'s own freight and passenger service has been "one of vacillation." With respect to (3), i.e., the five cents of the proposed increase predicated on the Los Angeles' pending application to NWLB, Mr. Vinson said his office "cannot assume that the National War Labor Board will approve the Los Angeles Railway application to the extent of five cents, or in fact to any extent." Moreover, a three-cent adjustment for the P. E. employees "roughly approximates the permissible limit under the 15 per cent 'Little Steel Formula.'"

The increases for switchtenders and yardmasters, which were not disapproved, would bring the former up from 60 cents per hour to 78½ cents, with an overtime rate of \$1.17½. The monthly pay of general yardmasters would be increased from \$282.80 to \$316, and that of yardmasters from \$272.80 to \$296.

OPA "Simplifies" Regulations

The Office of Price Administration has issued Revised Supplementary Regulation No. 14, effective July 15, in which various modifications of ceiling prices established by the General Maximum Price Regulation have been rearranged and put into uniform shape, the OPA announces. The 49-page, 3-column document includes among its 9 parts, or "articles," one dealing with storage and terminal services and one dealing with transportation services. In the latter category are 11 sections, in general confined to waterway or highway operations, but including pick-up and delivery truck services in connection with rail lines.

Intracity Cotton Transfer Gets Special ODT Permit

Under certain circumstances cotton may be moved in railroad cars between freight stations and compress facilities or warehouses in the same municipality or commercial zone, despite the provisions of General Order ODT No. 1, as the result of an exception to the order provided through General Permit ODT 1-3, effective July 19. This permit authorizes such movements where railroads have entered into contracts or published tariffs that establish such compress facilities or warehouses as depots for the receipt of cotton shipped or intended to be shipped by rail.

Warns Coal Mines on Nationalization

Newton fears danger to free enterprise in advances of federal funds

Asserting that neither he nor Secretary Ickes likes government control of the coal mines, Carl E. Newton, Deputy Coal Mines Administrator (president of the C. & O. in private life) discussed the danger of socialization of the coal industry in an address to the American Mining Congress at Cincinnati on July 20. If the mines "can achieve permanent peace" in their labor relations, the speaker believed nationalization would be avoided. "But," he went on to say, "if unsettled conditions which precipitated the present crisis should long endure, or if the government should turn the mines back and have to take them over again repeatedly, then I don't see how you can reasonably expect to avoid a progressive tightening of government supervision and control of mine operations. Government control would inevitably grow where conditions exist which bring public pressure for government action. Can we turn government control on and off with impunity?"

"Pause for a moment and observe what has happened in Great Britain. Laws prohibiting strikes, under heavy penalties, have failed to prevent them. The British coal industry has had many problems to deal with similar to our own; high production costs, instability of prices, wages, and employment. Over a period of years, unsettled conditions have called for a series of governmental solutions.

"His Majesty's government now owns the coal reserves. It controls the operation of the mines, and it allocates the coal to the consumers. It has poured millions of pounds of public funds into the industry. Yet the evils which were sought to be cured by the steps along the road to nationalization remain uncured. Today Great Britain's coal industry is not a free or competitive enterprise. And it has lost productive strength to the extent that the mines no longer can adequately meet war-expanded coal requirements.

"In the light of the fact that Great Britain has traveled far on the road to nationalization of its coal industry, can we Americans afford to be complacent?"

"Since taking office on July 1, I have been subjected to many heavy and insistent pressures from various sources to do things which, in my view, would be a long step on the road to nationalization of the coal mining industry. You may be surprised when I tell you that some of the heaviest

and most insistent of these pressures have come from members of your own industry. I have received dozens of telegrams from mine operators urging immediate advance of federal funds, and threatening to shut down their mines unless these funds are forthcoming.

"Secretary Ickes and I have resolutely resisted all of these pressures. To date, the Coal Mines Administration has not advanced one dollar to any coal operator. Some mines have shut down—as they have in every year, and as they will continue to do as long as coal is mined. But aggregate coal production is creeping up—not sliding off.

"However sympathetic we may be to these operators in their difficulties, are they so shortsighted that they cannot see what their demands for federal funds would lead to, if we complied with them? Easy money for one operator would create a torrent of demands from other operators. Gentlemen, don't think that the government is going to give you the taxpayers' money to risk in your business instead of risking your own! I see no evidence yet and I hope I shall never see any evidence that the industry as a whole cannot fulfill its national responsibility for the production of coal without substantial use of public funds."

Administrator Newton went on to affirm his faith in free competitive enterprise and to indicate his belief that those who are custodians of this institution should not risk its continuance by leaning unduly on the government. Mr. Newton said that the 580 million tons of bituminous and 60 million tons of anthracite which the coal industry produced last year does not make it look as though the industry is "ready to fold up as a privately-owned and competitively-operated industry." However, a goal of 600 million tons of bituminous and 65 million tons of anthracite is set for this year.

Contract Oil Barge Rates Get an OPA Ceiling

Dollars-and-cents "ceiling" prices for the transportation of oil and petroleum products by other than common carriers in bulk by barge, and for the character of tugboats and barges, on specified inland waterways have been set by the Office of Price Administration in Amendment No. 29 to Revised Supplementary Regulation No. 11, effective July 16.

WPB Widens Its Cross-Hauling Restrictions

Pointing out that its Transportation Request TR-1 has resulted in the six months it has been effective, in substantial "savings" of tank car miles by reducing cross-hauling of certain chemicals, the War Production Board announced July 16 that the provisions of that document have been superseded by Haulage Request TR-2, which implements its General Haulage Conservation Order T-1, which in turn was, until July 1, titled General Transportation Order No. 1.

The restrictions of the earlier "request," which applied principally to the movement of caustic soda and molasses

in tank cars, have been extended over various solids and bulk or packaged shipments without regard for the type of transportation equipment used, the WPB explained. Various dry chemicals, coke and fluxstone are brought within its provisions, among some fifty commodities. Through the operation of a certificate signed by Donald Nelson, WPB chairman, producers of the specified commodities are authorized to make sales, exchanges and loans of such materials to supply demands from the nearest available shipping point, with exemption from anti-trust law prosecution for such transactions.

P. R. R. Finds Way to Clean Coaches Despite Heavy Traffic

Because heavy wartime travel oftentimes requires that cars be immediately used for a return trip, thus preventing the thorough cleaning which such cars would ordinarily receive, the Pennsylvania now has assigned a group of "en route" women cleaners to such trains. The women are smartly uniformed and are equipped with short brooms, dust pans, rubbish bags and dusting cloths. They go through the coaches, collecting litter and straightening up the cars, leaving the trains at designated points, where they board and clean cars of returning trains.

Eastern Oil Movement

Frequent changes in tank car assignments are being made by the Office of Defense Transportation to keep the largest possible oil movement to the East under way at all times, the ODT pointed out in a July 20 press release which followed by one day the official completion of the eastern link of the so-called "Big Inch" pipeline through which crude oil will be moved from Texas to refinery centers along the Atlantic seaboard, eventually doing away with the transfer of oil into tank cars at Norris City, Ill., for movement east by rail.

Actual deliveries of oil through the newly opened section of the 24-inch pipeline are expected to begin early in August, Petroleum Administrator Ickes pointed out.

At first the movement will be at the rate of about 100,000 barrels a day, while by August 15 it will be stepped up to some 200,000 barrels a day. Full capacity of 300,000 barrels a day or more will not be reached until additional pumping stations are put in service.

Meanwhile about 2,500 tank cars that have been engaged in the petroleum movement between Norris City and the east coast have been diverted by the ODT to haul crude oil from the Southwest to the refineries in the East. This shift was ordered to take up cars released as daily shipments by rail from Norris City were cut in proportion to the diversion of oil through the new section of pipeline, and their contribution to receipts in the East will make up in part for the lag in deliveries while the new pipeline is being filled, the ODT explained.

Other recent shifts in tank car assignments have involved another 2,500 tank

cars, most of which were withdrawn from other services during the past two months and assigned to the Atlantic coast oil movement. The ODT emphasized, however, that a net gain of 2,500 tank cars in the eastern oil movement has not resulted from such diversions, as other blocks of tank cars have been withdrawn from the east coast service for other purposes essential to the war. About one-half of the 2,500 or more cars recently added to the long haul oil movement were made available through the co-operation of various railroads and the Association of American Railroads, the ODT added further.

Where A. A. R. reports have indicated that tank cars have been detained at loading or unloading points for more than 24 hours, the ODT has investigated the cause of delay, it was explained, and where such delays were caused by a surplus of cars in the hands of shippers the excess has been diverted elsewhere. Close checks on tank car delays in shippers' hands are maintained also through shipper reports to the ODT of cars shipped and cars left on hand at the end of each day, the ODT statement went on to say.

Tank car loadings of petroleum for points in District No. 1 averaged 994,236 barrels a day during the week ended July 17, Mr. Ickes announced on July 22. This was a drop of 22,793 barrels a day from the previous week's record-breaking figure. Further decreases may be expected in the near future, he pointed out, as shipments from Norris City will drop off as the pipeline to the east coast is being filled.

Six Days a Week Receipt of Freight Is Urged

Receivers of freight have been called upon by the Office of Defense Transportation and the Interstate Commerce Commission to arrange immediately for full six-day-a-week receipt of carload and l.c.l. shipments. The joint appeal came in a statement issued on July 20 by ODT Director Joseph B. Eastman and Commissioner J. Monroe Johnson who is in charge of car service matters for the commission.

"Refusal to receive carload and less-than-carload freight on various days of the week, particularly Saturday, directly contributes to congestion of freight houses and ties up cars unnecessarily," the statement said. "In these times when every car is needed and manpower is short in the freight houses, nothing should be done by the receivers of freight which would tend in any way to impede its free and speedy movement.

"In view of the fact that a great part of the nation's industry is working on a six-day, 48-hour week, we are asking all receivers of freight to make arrangements so that the railroads and the motor carriers can make freight deliveries at any time of the day during the full six-day week.

"This, we feel, must be done to relieve congestion and speed up the movement of cars, even though the particular establishment is not open to the public throughout the entire week."

GENERAL NEWS

Plans Locomotive Research Activities

Institute expects to improve efficiency and performance of steam locomotives

For some years the Locomotive Institute has been carrying on intensive studies in connection with steam locomotive design and performance through a committee of technical representatives. Many subjects have been handled and methods adopted, all with the object of improving performance, reducing maintenance costs, and providing greater reliability and efficiency of the locomotive. Positive and advantageous results have accrued from these activities.

The necessary contribution to the war effort of all the locomotive builders has, to a certain extent, limited the time available to their technical staffs for steady prosecution of these studies. The Institute, with a full realization of the importance of continuous stress on war work, is also fully aware of the contribution being made daily by the railroads of the country in the handling of war materials, troops and supplies, no small part of which was due to their locomotive inventory. With this in mind and looking ahead to post-war transportation, it was decided that for the steam locomotive to maintain its position as the main reliance of railroad transportation throughout the world, these studies, already started, must be carried on without loss of time, and it has recently set up an organization to handle the work.

Lawford H. Fry was appointed director of research of the Locomotive Institute on July 1. His entire time will be devoted to research work in connection with locomotive design, under the jurisdiction of the Technical Committee of the Institute. Studies already under way in connection with motive power will be accelerated and a thorough investigation made of recent accomplishments that have already resulted in improving the performance of the steam locomotive to a point where yearly mileages are more than double what they were a few years ago.

Mr. Fry's background is such as to make him eminently qualified for the work he is undertaking. Many years experience in the engineering and testing departments of the Baldwin Locomotive Works at Philadelphia, metallurgical and engineering experience with the Standard Steel Works and the Edgewater Steel Company, as well as several years' experience abroad will stand him in good stead. He will be assisted in his work by the technical experts

of the locomotive builders. His headquarters will be at 60 East 42nd street, New York, where offices and engineering facilities will be maintained.

Railway Tie Association

The Railway Tie Association will hold its Twenty-sixth Annual meeting at the Netherland Plaza Hotel, Cincinnati, Ohio, on May 16-17, 1944.

I. C. C. Issues Forwarder Permit to Universal Carloading

The Interstate Commerce Commission, Division 4, has issued to the Universal Carloading & Distributing Company a permit authorizing continuance of operations as a freight forwarder between all points in the United States. The report is in No. FF-43.

Safety Poster for August

The importance of wearing safety shoes for protection is the theme of the circular and poster issued by the Committee of Education, Safety Section of the A.A.R., for the month of August. The poster shows a railroader presenting his shoe ration stamp at a shoe counter and is entitled, "Make Mine Safety Shoes This Time."

Latimer Gets Leave From Retirement Board

Murray W. Latimer, chairman of the Railroad Retirement Board, has been given a four-months leave of absence to become executive officer of the Office of Foreign Relief and Rehabilitation Operations, the director of which is former Governor Herbert H. Lehman, of New York. Mr. Latimer has assumed his duties in Washington.

M. & St. L. Soon to Operate Without Fixed Charges

Federal Judge Gunnar H. Nordbye, Minneapolis, Minn., has approved a modified plan, eliminating the first mortgage for the reorganization of the Minneapolis & St. Louis, and this road will begin operations within a few weeks without fixed charges and a funded debt of only \$2,015,000 of general mortgage bonds on which interest is payable up to 4 per cent, only if earned.

Improved financial conditions made it possible to complete reorganization without borrowing \$4,000,000 from the Reconstruction Finance Corporation. Only a few legal steps are necessary to make effective the modified plan approved by Judge Nordbye, thus bringing to an end one of the longest railroad receiverships on record. The proceeding began 20 years ago.

New Haven Plan Modified by I.C.C.

Basic features of 1942 plan retained; state may buy Old Colony

A fourth supplemental report of the Interstate Commerce Commission, modifying in detail some of the provisions of its plan for the reorganization of the New York, New Haven & Hartford and certain associated companies—the Old Colony, Hartford & Connecticut Western, and Providence, Warren & Bristol—but retaining the basic features of the plan previously approved, was made public July 20. The capitalization of the new company remains unchanged at \$365,000,000, not including the Old Colony or the Boston & Providence, and, as before, the commission finds the equity of the stockholders of the old New Haven of no value.

The distribution of securities of the new company among creditors is revised in some particulars in the modified plan, reflecting changes in equipment obligations and certain accruals and payments of interest and principal that have occurred since the previous plan was developed. The state of Massachusetts, which had protested the conditions included in the approved plan under which the new company might discontinue suburban passenger service on the so-called Boston group of lines of the Old Colony, is given an option to buy that portion of the Old Colony extending from Boston to Braintree at its salvage value if the service should be discontinued.

In the report just issued the commission reviews the objections offered to its 1942 plan by various creditors and interested parties, some of which it considered soundly based and cause for modifying that plan. The terms of the 1942 plan, particularly as it affected the relations between the New Haven and the Old Colony, were reviewed in *Railway Age* of October 17, 1942, page 626. It, in turn, was a modification of the commission's 1941 plan, to which the court had made certain objections, but it retained provisions of the earlier plan for the new company's capitalization and for the elimination of equities.

Taking up the claims of the old company's stockholders that the road's improved earnings justify an increase in the total capitalization of the new company, which would result in some provision for their claims, the commission termed this improvement in earnings and cash position a result of abnormal conditions which do not afford a sound basis for estimates of

(Continued on page 189)

U. S. Barge Lines Had Big '42 Deficit

Loss of \$798,467.79 compares
with 1941 red figures
of \$190,561.77

Reporting the government-owned Inland Waterways Corporation's deficit of \$798,467.79 for 1942, President Chester C. Thompson undertook to soften the blow with a suggestion that it was but "proper and necessary to recognize that the financial or profit motive is not, in itself, the only function or primary objective prescribed by Congress in creating the Corporation." And Mr. Thompson included the usual estimate of "savings" to the "public" on traffic handled by I. W. C., the 1942 figure being \$1,910,600, which represents the difference between I. W. C. rates and what "would have been paid had the traffic moved all rail." Total "savings" since the creation of the Corporation on June 1, 1924, were put at \$39,235,000.

Nevertheless the red figure of \$798,467.79 remained to be contrasted with 1941's deficit of \$190,561.77. Last year's more unfavorable results were attributed to the fact that it was possible to cut expenses only 2.2 per cent, while traffic was falling off 11.9 per cent and gross revenues 9.4 per cent. One factor on the expense side was the Interstate Commerce Commission's depreciation order which made charges for depreciation and amortization exceed those of 1941 by \$128,579.68. Also, repair expenses were up, the report explaining that more than 40 per cent of the Corporation's floating equipment has been in service for 20 years.

With respect to the falling off in traffic and revenue, Mr. Thompson complained that I. W. C. and other carriers on the inland waterways have not as yet "been called upon or permitted to be of the [war-time] service possible with existing organizations and facilities." He recalled that I. W. C. had its inception during World War I, adding that it should "play an important role in the present war and become a real factor in the transportation of equipment, supplies and materials needed to bring it to an early conclusion." This situation, the report said in another place, has been officially recognized by the Office of Defense Transportation and other agencies of the government; and although "efforts to remedy it have been made, little improvement is apparent."

The consolidated income account shows the 1942 gross revenues at \$7,504,285.80 compared with \$8,307,114.47 in 1941; while operating expenses were \$8,362,545.59 compared with \$8,585,051.76. The 1942 operating loss of \$858,259.79 was reduced to the \$798,467.49 net deficit noted above after various adjustments for other income and deductions from income. Expenditures for new equipment in 1942 totaled \$247,467.49, including \$60,300 for a Diesel-electric locomotive for use at Memphis, Tenn. Meanwhile equipment retired amounted to \$3,227,474.84, consisting principally of barges sold to the Defense Plant Corporation for conversion to oil carriers.

I. W. C. has been acting as DPC agent for the acquisition and conversion of dry cargo steel barges to oil carriers. Also, it is chartering agent with respect to new floating equipment being financed by DPC. Such new equipment will be chartered to various carriers, and I. W. C. probably will charter some of the boats itself "in order to step up the movement of petroleum products on its system during the emergency."

In concluding, Mr. Thompson said that I. W. C. relationships with other carriers "continues most friendly and cooperative." I. W. C., he added, "has its house in order and is ready to assume an even greater responsibility in the transportation of necessary goods and equipment needed for the war, and will cooperate and work with other water carriers in accomplishing all that can or will be expected from this type of transportation under present war conditions."

Western and Southeastern Roads Out of "Diesel" Case

Representatives of Western and Southeastern roads have withdrawn from the further "Diesel" case conferences suggested by President Roosevelt after the Brotherhood of Locomotive Firemen and Enginemen had registered its dissatisfaction with the recent emergency board report in the proceeding. Representatives of the Eastern carriers were continuing their meetings with the union officials.

No Annual Meeting of Signal Section in 1943

The Signal Section, A. A. R., will not have an annual meeting in 1943. Such is the decision of the Committee of Direction, the reason being, of course, the war. The Committee of Direction will meet with committee chairmen in Chicago on October 14 to consider the reports contained in the 1943 advance notice. Thereafter a letter ballot will be issued and the proposals which are adopted will be placed in the Manual of Recommended Practices.

Representation of Employees

Acting upon results of recent elections in representation-of-employees disputes, the National Mediation Board has designated the American Railway Supervisors' Association as the Railway Labor Act representative of Chicago, St. Paul, Minneapolis & Omaha yardmasters. The Association beat the Brotherhood of Railroad Trainmen by a vote of 10 to 9.

Meanwhile the B. of R. T. has won the right to represent Norfolk & Western dining car stewards, while clerical, office, station and storehouse employees of the Detroit & Mackinac and the Philadelphia, Bethlehem & New England have chosen the Brotherhood of Railway Clerks. Unions operating through the Railway Employees Department, American Federation of Labor have been designated as representatives of various Utah Copper Company shop employees whose duties include the repair and maintenance of Bingham & Garfield equipment, foreign line equipment, and equipment used in ore transportation service.

Rail Studies Dying With Planning Body

They were in the "technical
paper" stage when Congress
ordered liquidation

Among National Resources Planning Board files, now being transferred to the National Archives in accordance with Congress' recent action liquidating the Board, are some embryo studies of post-war transportation which had reached only the "technical paper" stage when the axe fell. "Technical paper" was the NRPB's name for a memorandum prepared by a member of its staff for circulation to interested parties for comment and criticism.

The transportation papers, which had been or were about to be thus sent around, consist of four memoranda as follows: The Railroad Industry After the War, by Ernest W. Williams, Jr.; The Railroad Terminal Problem—Buffalo, N. Y., as an Example for Study, by Robert B. Shaw; Highway Transportation—Wartime Problems and Future Development, by Wilfred Owen; and Air Transport After the War, also by Mr. Williams. The Board's disclaimer calls them "technical papers supplementing the reports of the National Resources Planning Board," adding that "the contents of these papers are the sole responsibility of the authors and do not necessarily bear the endorsement of the National Resources Planning Board."

Mr. Williams' memorandum on "The Railroad Industry After the War" consists of 33 mimeographed sheets, setting forth among his other views the suggestion that some way must be found to make the railroads eligible as beneficiaries of large government expenditures in the post-war era. This is along the line of discussions in the NRPB transportation reports which suggested that government acquisition of railroad rights-of-way and government expenditures thereon would be one way of bringing about more equitable conditions of competition in the transportation field.

Speaking of financing for post-war railroad improvements, Mr. Williams has this to say: "If interest on the part of private financiers is lacking recourse can, of course, be had to government sources of capital. The Reconstruction Finance Corporation, or some similar agency with expanded authority and resources, might underwrite railroad rehabilitation and modernization. Such a policy might take several forms. It might represent simply an expansion of the pre-war policy of loans to needy carriers on the basis of adequate security or it might go much farther. Conceivably a corporation might be set up which would be empowered to acquire leasehold rights of railroads, or of portions of railroads. The rental for such properties would be based upon the value or earning capacity of the railways. Improvements to way and structures would be made with the help of government credit, though the roads would continue to be operated by

the lessees, private operating corporations which would own the rolling stock and motive power and have reasonable voice in the determination of standards of construction and maintenance which might, indeed, be performed by their own forces, but under proper controls to insure efficient work. . . ."

Later on the memorandum predicts that "a great physical job will have to be done in rehabilitating the rail carriers and catching up with the march of technical progress after a long period of labor and material shortages." There Mr. Williams stresses what he conceives to be the need for large-scale terminal reconstruction, calling for government financing through public corporations or similar machinery, except in cases where the carriers "are prepared to accomplish the same ends on their own initiative." Unless this role is filled by government, he went on, "the railroad is doomed to remain outside in a field where all other types of transportation are receiving government assistance in one form or another and where greatly increased government investment must be expected in the post-war era, especially in improved highways and numerous airports and aids to navigation."

It appears to Mr. Williams "unlikely that other forms of transport will soon be placed on a par with the railroads through the medium of user charges sufficient to carry the government investment." Hence, "if excluded from the field of public works expenditure the railroads can only face a period of prolonged, but destructive attrition which will be little more profitable to the national interest than to private railroad interests."

If the "bold decisions" which will open the way for government investment in railroad terminal properties are made, Mr. Williams sees a bright future for the railroads—provided the "public policy succeed in maintaining full employment and cushioning the shock of post-war adjustment." Meanwhile, he gives the railroad industry a pat on the back for its wartime achievement, calling it "an amazing record for performance under most adverse conditions."

The Buffalo terminal study by Mr. Shaw is designed to show what might be accomplished in the way of operating economies and civic improvements by terminal unification and coordinated terminal operations. It suggests that if the railroads serving Buffalo were not disposed to act on their own initiative, the city authorities might file a complaint with the Interstate Commerce Commission which possesses "very sparingly exercised" power to required joint use of terminal facilities.

The Williams memorandum on air transport calls the future of that industry "brilliant"; although federal financing of ground facilities "must play a larger role than in the past." And operating subsidies in the form of mail pay or some other device "will probably continue to be essential for some years." The Owen memorandum on highway transportation is along the same lines, calling for bigger government expenditures on highways in the post-war

period. It also recommends that terminals for motor carriers be furnished through public or quasi-public authority.

To Investigate Kentucky Fares

An investigation of alleged discriminations resulting from variations between interstate and intrastate passenger fares effective in Kentucky has been ordered by the Interstate Commerce Commission, which has docketed the case as No. 29000. Railroads serving Kentucky had petitioned the commission to overrule the state commission, which had approved an increase of intrastate first class fares to the same basis as the interstate fares but had refused to approve a similar increase in coach fares.

Retirement Board Annual Report for Fiscal 1942

The annual report of the Railroad Retirement Board for the fiscal year ended June 30, 1942, has been published and is now available in booklet form. Considerable delay in publishing this report was attributed to moving the board headquarters to Chicago and to printing difficulties.

Figures on the operation of the board for the fiscal year 1941-42 were released last September, however, and were reported in considerable detail in the *Railway Age* of September 19, page 465.

June Operating Revenues 18.1 Per Cent Above 1942

Preliminary reports for 89 Class I railroads, representing 81.3 per cent of total operating revenues, made public July 19 by the Association of American Railroads, show that those roads in June had estimated operating revenues amounting to \$598,598,091, compared with \$506,920,845 in the same month of 1942, or an increase of 18.1 per cent.

June freight revenues of the 89 roads amounted to \$442,358,235 compared with \$405,646,304 in June, 1942, or an increase of 9.1 per cent. Passenger revenues totaled \$115,535,820 compared with \$68,025,090, or an increase of 69.8 per cent.

Chicago-Built Ships Commissioned in Royal Navy

On July 16, for the first time in history the White Ensign of the British Royal Navy was hoisted over a new American-built warship in Chicago. The warship is the first of several being built for the British Navy in the Calumet Harbor Yards of the Pullman-Standard Car Manufacturing Company, the launching of which, on May 2, was reported in the *Railway Age* of May 8. They are the first ships of any kind built by this company.

Lieut.-Commander P. Everett-Price, D. S. C., R. N. R., British naval liaison officer in the Chicago area, speaking of these vessels at the commissioning ceremony said, "It is marvellous how a company which in peacetime was engaged in constructing only railroad rolling stock, has achieved such a conversion and built so fine a ship at their first attempt. In praising the company, I want also to em-

phasize the great responsibility shouldered by Captain Wallace R. Dowd, USN, naval supervisor of shipbuilding in the Chicago area, who directed and guided the construction of the vessels. I would also like to pay tribute to the excellent performance of the workers at the Pullman-Standard plant who worked so hard to get the ship delivered on time. They did a swell job as our men who take this ship into combat will soon testify."

Freight Car Loading

Loadings of revenue freight for the week ended July 17 totaled 877,330 cars, the Association of American Railroads announced on July 22. This was an increase of 68,700 cars, or 8.5 per cent, over the preceding week, and an increase of 20,184 cars, or 2.4 per cent, above the corresponding week last year, but a decrease of 22,040 cars, or 2.5 per cent, below the comparable 1941 week.

Loading of revenue freight for the week ended July 10, which included the July 4 holiday, totaled 808,630 cars, and the summary for the week, as compiled by the Car Service Division, A. A. R., follows:

Revenue Freight Car Loadings			
For the Week Ended Saturday, July 10			
District	1943	1942	1941
Eastern	151,558	155,367	180,548
Allegheny	175,040	184,348	189,175
Poconantas	56,204	54,219	55,494
Southern	109,143	115,103	113,566
Northwestern	128,293	147,176	146,801
Central Western	118,709	129,190	134,173
Southwestern	69,683	69,755	56,385
Total Western Districts	216,685	346,121	337,359
Total All Roads	808,630	855,158	876,142
Commodities			
Grain and grain products	54,809	53,509	62,695
Live stock	11,150	10,348	10,177
Coal	164,803	158,827	147,464
Coke	12,956	14,338	13,577
Forest products	37,226	51,034	44,255
Ore	89,309	94,037	81,175
Merchandise l.c.l.	89,574	88,705	154,133
Miscellaneous	348,803	384,360	362,666
July 10	808,630	855,158	876,142
July 3	852,106	753,740	740,359
June 26	760,844	853,418	908,604
June 19	868,241	844,913	885,539
June 12	854,486	832,635	862,974

Cumulative Total,
28 Weeks ... 21,757,758 22,672,299 21,467,233

In Canada.—Car loadings for the week ended July 10 totaled 66,091 as compared with 66,789 for the corresponding week last year, according to the compilation of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
July 10, 1943	66,091	36,863
July 3, 1943	62,369	36,492
June 26, 1943	67,734	40,340
July 11, 1942	66,789	37,122

Cumulative Totals for Canada:
July 10, 1943 1,760,474 | 1,033,769 || July 11, 1942 | 1,766,356 | 912,963 |
| July 12, 1941 | 1,613,789 | 814,305 |

Indiana Sues for Violations of "Full Crew" Law

James A. Emmert, attorney general of Indiana has filed suits against the Baltimore & Ohio; the Chicago, Milwaukee, St. Paul & Pacific; the Illinois Central; the New York Central and the Pennsylvania, for the Indiana Public Service Commission in circuit court at Indianapolis, Ind., charging violations of the "full crew" law, which

in Indiana requires an extra brakeman on trains more than 70 cars long. The complaints cite 120 instances in which these roads are alleged to have operated trains of more than 70 cars without "full" crews and the court has been asked to assess the maximum penalty provided by state statute. The commission is reported to have more claims of violations which they can file with the state attorney general if they wish to.

Publication of New Uniform Bill of Lading Authorized

The Interstate Commerce Commission has authorized publication in the Consolidated Classification of the uniform standard bill of lading and uniform order bill of lading in the new form proposed by the Association of American Railroads. The authority came in a July 12 order in the No. 4844 proceeding.

It stipulates that the revised forms may be published with the understanding that the wording on the face and back of the forms will conform to that now printed in the Classification, the only changes being in the arrangement and spacing of the printed matter on the face of the forms; and that the railroads shall allow shippers to use up their present supply of bills of lading before requiring such bills to conform to the rearrangement authorized.

Railway Express Inaugurates Employee Training Program

Newly appointed supervisors of training in each operating region of the Railway Express Agency, Inc., are undergoing intensive training sessions this week at the Drake hotel, Chicago, to prepare them for their assignment to instruct and inspire supervisory officers, who will actually train the employees, at regular intervals, in all principal express offices. This nationwide training program has been inaugurated for new employees, men and women, who are replacing over 13,000 experienced expressmen now in the armed forces and, generally, to increase the knowledge of all.

Prevention of loss and damage to shipments in transit; safety practices in the daily operation of the Agency's 15,000 trucks in principal cities and towns and, above all, courteous and efficient service to the public are among major objectives of the training schedule. Employees will be encouraged to develop leadership and to fit themselves for advancement. The "conference" method, in which they will learn as individuals under a leader, will be utilized, rather than classroom procedure.

Burlington's General Manager Joins ODT Staff

Appointment of James H. Aydelott, general manager of the Chicago, Burlington & Quincy, lines east, as an associate director in the Division of Railway Transportation was announced July 19 by ODT Director Joseph B. Eastman. Mr. Aydelott replaces Oscar N. Harstad on the ODT staff, following the latter's promotion to the position of assistant chief operating

officer of the Chicago, Milwaukee, St. Paul & Pacific, as reported in *Railway Age* of June 26.

Mr. Aydelott will direct the division's part in the movement of oil from the Southwest and Middle West to the Atlantic coast by tank car and symbol train, Mr. Eastman's announcement indicated.

The new ODT associate director was born in Jersey County, Ill., in 1883. After completing courses in public schools and business college, he entered the service of the Burlington in 1902 as a stenographer and clerk at Brookfield, Mo., and since that time he has been continuously associated with that company.

Mr. Aydelott's first promotion came in 1903, when he became timekeeper and accountant at Brookfield. From 1908 to 1911 he was chief clerk in the division superintendent's office at St. Joseph, Mo., after which he was for about a year chief clerk in the office of the general superintendent at St. Louis, Mo. From 1912 to 1916 he held a similar position in the office of the assistant general manager at Chicago.

In 1916 Mr. Aydelott was selected for an operating position, being appointed



J. H. Aydelott

trainmaster at La Crosse, Wis. Then, after serving from 1917 to 1920 as superintendent at Hannibal, Mo., he became superintendent of transportation, with headquarters at Chicago. From 1922 to 1930 he was superintendent of the Illinois district of the Burlington, with offices at Galesburg, Ill., and in the latter year he was transferred to Ft. Worth, Tex., where he held the position of general manager of two subsidiary roads, the Ft. Worth & Denver City and the Wichita Valley. From 1931 to 1936 his position was general manager of the Burlington's lines west, with headquarters at Omaha, Neb. In 1936 he was again moved to Chicago to take the position of general manager, lines east, which he held at the time of his appointment to the ODT staff.

Union Pacific Mine Commended

A good accident record, adequate ventilation, the use of protective clothing by workers, application of rock dust and water to control coal dust, and a smooth-working safety organization are among the safety features listed by federal coal

mine inspectors for the Union Pacific Coal Company's Hanna No. 4 mine in Carbon County, Wyo., according to Dr. R. R. Sayers, director of the Bureau of Mines.

The mine was inspected a few months ago by Bureau representatives who concluded that there were "very few hazardous conditions or practices." The Union Pacific Coal Company "is outstanding in the maintenance of safety organizations and safety practices," the inspectors stated in quoting company figures showing that the mine produced 192,924 tons of coal for each lost time accident in 1942, as against the national average of about 9,000 tons per accident.

First Half's Ton-Miles Up 22 Per Cent

Class I railroads handled about 22 per cent more ton-miles of revenue freight in the first six months of 1943 than was handled in the corresponding period of 1942, according to a preliminary estimate prepared by the Association of American Railroads.

The service performed in this year's first half was also 68 per cent greater than in the same period of 1941, 104 per cent more than during the first half of 1940, and 143 per cent more than during the first six months of 1939.

The following table summarizes revenue ton-mile statistics for the first six months of 1943 and 1942:

	Revenue Ton-Miles of Freight		
	1943	1942	Per Cent Increase
4 Months	229,863,978,000	182,014,772,000	26.3
May	a 62,500,000,000	54,270,231,000	15.2
June	b 61,000,000,000	53,852,328,000	13.3
6 Months	353,363,978,000	290,137,331,000	21.8

a Revised estimate.

b Preliminary estimate.

I. C. C. Service Orders

Service Order No. 136 of the Interstate Commerce Commission, directing rerouting of freight traffic because of flood conditions affecting the lines of the Canadian National and Grand Trunk between Sherbrooke, Que., and Island Pond, Vt., was cancelled July 20 by Service Order No. 136-A.

On the same day the commission's Service Order No. 134, prohibiting the holding of potatoes in carloads for diversion, reconsignment or orders at certain points, was set aside through Service Order No. 134-A.

Service Order No. 137, effective July 17, directed the routing of three carloads of machinery from Newport News, Va., to the Grand Coulee power plant, Odair, Wash., by the routes best suited, in view of an emergency arising from the fact that it could not be moved by established tariff routes. Rates effective over the route selected by the originating road, under supervision of the Car Service Division of the Association of American Railroads, were ordered applied to the movement, and provisions for divisions of revenues were incorporated in the order.

Food Distribution Order 65 of the War Food Administration, effective July 24, limited shipments of fresh pears from the Pacific coast states. Individual shippers

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in California are required to limit their shipments out of that state for fresh consumption to the amounts shipped for that purpose last year, while shippers in Oregon and Washington are limited to 75 per cent of the quantity shipped last year for the same use. Exemptions will be permitted only when the fruit cannot be utilized by local processors.

Equipment on Order

Class I railroads on July 1 had 31,744 new freight cars on order, according to the Association of American Railroads. On the same date last year they had 39,530 on order.

This year's July 1 total included 3,494 plain box; 2,525 automobile box; 6,669 gondolas; 17,532 hoppers; 200 stock and 1,324 flat cars.

Railroads also had 1,024 new locomotives on order on July 1, which included 506 steam, five electrics, and 513 Diesel-electrics. On July 1, 1942, they had 917 locomotives on order which included 350 steam and 567 electrics and Diesel-electrics.

Class I roads put 9,415 new freight cars in service in the first six months of 1943, compared with 48,769 in the same period last year. Those installed in the six months of 1943 included 3,345 hoppers, 4,018 gondola, 1,387 flat, 135 automobile box, 481 plain box, two stock and 47 miscellaneous freight cars.

They also put 293 new locomotives in service in the first six months this year, of which 200 were steam, 13 electrics, and 80 Diesel-electrics. New locomotives installed in the same period last year totaled 365, of which 148 were steam and 217 were electric and Diesel-electric.

New Haven Plan Is Modified by I.C.C.

(Continued from page 185)

the road's future. To allot any part of the new company's stock to the old company's stockholders it first would have to satisfy fully all claims of all creditors, including the unsecured creditors, the commission pointed out, and it does not consider that the stockholders' proposal for allotments of stock would constitute full compensation to unsecured creditors.

The principal change in the distribution of new company securities under the modified plan, as compared with the 1942 plan, is an increase in the allocation of new fixed-interest bonds and income bonds to certain secured creditors who did not receive under the previous plan fixed-interest bonds in amounts equal to their claims. This has been done without increasing the total amounts of such new securities to be issued, as the payment of accrued interest in substantial amounts by the trustees since the formulation of the 1942 plan has to that extent reduced the total secured obligations of the old company. The amounts of new preferred and common stock to be distributed have been adjusted to correspond with these changed allotments.

Reviewing its treatment of holders of the old company's first and refunding bonds, the commission defends its alloca-

tion of new securities to them, pointing out that they maintain prior rights to assets and their claim upon income is protected, so that their position is improved on the whole, even though some lien priority is surrendered.

The modified plan incorporates a provision for the indemnification of the Bankers Trust Company, trustee under the New Haven's first and refunding mortgage, to the extent that it might be found liable as the result of court action undertaken on behalf of the Old Colony, which has asserted a claim of \$10,984,139 against it, and as the result of court proceedings involving certain New York state taxes.

Objections of six banks holding collateral notes of the old company to the allocation of fixed-interest bonds provided for them in the commission's plan did not result in modification of the principle on which the allocation was made, that is, that fixed-interest bonds and income bonds would be allotted to them proportionally to the ratio of collateral to debt in each case. The latest plan does provide, however, that recognition should be given changes in this ratio that have occurred since the earlier plan was adopted.

To the request of the state of Massachusetts that the commission should adopt again the essential provisions of the so-called escape plan for the acquisition of the Old Colony by the reorganized company, which was included in its 1941 plan but "severely criticized" by the court, the commission replies that similar criticism would no doubt follow its inclusion, even if modified, in the current plan. It goes on to point out that the proposal for the acquisition of the Old Colony which was incorporated in the 1942 plan was the result of a compromise reached after extended negotiations, and that any departure from its terms would reopen the whole question and entail further delays in completing the reorganization. As a concession to the state's concern over the possibility that sections served by the Old Colony might be left without passenger service if the new company should be faced with the conditions established in the plan under which it could elect to discontinue such operations, the provision to give the state a 10-year option to buy the lines between Boston and Braintree at their net salvage value was included.

The commission's current report reviews in some detail various contentions made in the interest of the Boston Terminal, questioning the right of the commission and the court to alter the relationships between the terminal and the New Haven and associated companies, and alleging that the commission's action in this respect had been based on inadequate evidence. It concludes with a denial of the petitions of the terminal interests, expressing "regret" that they had not considered it necessary to take part in the proceedings sooner, but affirming its belief that the plan affords them equitable treatment.

The modified plan fixes July 1, 1943, as the effective date of the reorganization. It is accompanied by a third supplemental report in the Boston & Providence reorganization proceedings, which reviews certain proposals suggesting modifications of

the plan, particularly in the interest of the Boston Terminal, but concludes that the plan previously adopted should not be modified, except for a provision that the New Haven will be liable for taxes due from this company.

Commissioner Miller dissented from the majority report in the New Haven proceedings, taking the position that that company's stockholders should participate in the reorganization to the extent of a fair share of the equity resulting from cancellation of the claims of the Old Colony and the Boston & Providence. Commissioners Splawn, Johnson and Rogers did not participate in the reconsideration of the plan.

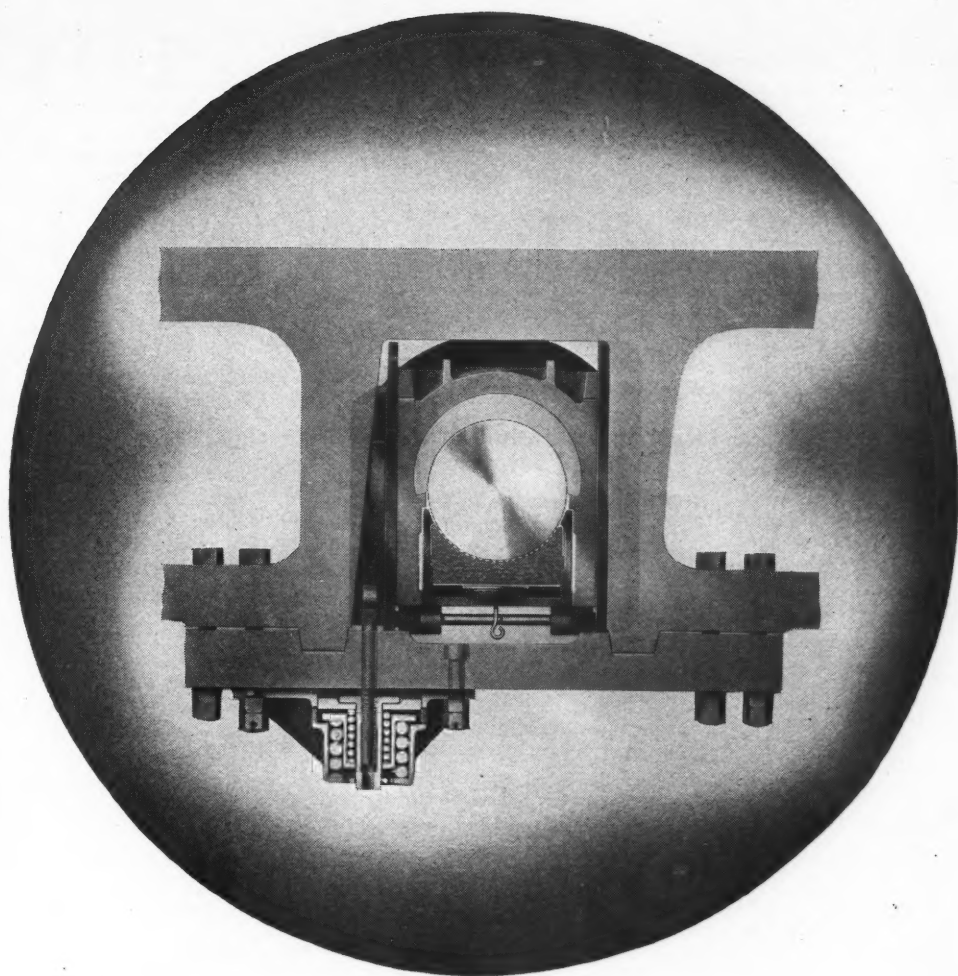
Under the proposed plan the annual requirements for interest, sinking funds, capital funds and preferred stock dividends amount of \$14,057,050. This includes \$1,000,000 for the capital fund, which will go to increase the road's assets, and \$730,564 for sinking funds, which will go to retire debt, the commission points out. Fixed charges amount to \$5,241,237, not including \$788,000 rent for leased roads. Aside from the capital fund and sinking fund provisions, contingent interest charges would amount to \$3,875,070. Dividends on the preferred stock, which would be cumulative only to the extent that they are earned but unpaid, would amount to \$2,422,179. Holders of the preferred stock would retain from the 1942 plan the right to elect two-thirds of the board of directors until 5 years after the effective date of the reorganization, and thereafter whenever accrued dividends amount to 10 per cent.

In addition to equipment trusts, old company obligations undisturbed by the reorganization include \$2,500,000 of Naugatuck first mortgage 4 per cent 50-year gold bonds, \$15,000,000 of Harlem River & Port Chester first mortgage 4 per cent 50-year gold bonds, \$3,922,000 of Providence Terminal first mortgage 4 per cent bonds, and \$850,000 due the Railroad Credit Corporation. The Reconstruction Finance Corporation is to receive new 10-year collateral notes in the amount of \$8,300,000 in satisfaction of its claims. Other obligations of the old company will be met by distribution of fixed-interest bonds, income bonds, and stock of the new company in varying proportions, some specified in the commission's report and others to be determined by the court.

Provisions for the acquisition of the Old Colony and Boston & Providence were set forth in the previous plan, and have not been modified in this revision. If carried through, they would result in increasing the total capitalization of the new company to \$376,731,053. Fixed interest charges would be increased to \$5,456,961 annually, and contingent interest charges to \$3,967,139 annually.

Uphold Commission's Authority to Lift Train Limit

In compliance with the request of the Interstate Commerce Commission, noted in *Railway Age* of June 19, page 1240, that interested parties file briefs discussing the commission's power to issue its Service Order No. 85—which in effect directs rail-



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roads to disregard the train-limit laws of Arizona and Oklahoma during the wartime emergency—roads operating in those two states have filed a brief in which they develop the opinion that the commission's action "represents a proper exercise of power vested in Congress by the Constitution and duly delegated by Congress to the commission."

The brief dismisses as without merit the allegations of train service brotherhoods questioning the commission's authority in the circumstances, citing precedents for action which has the effect of nullifying state statutes. The unions' claim that the order has reduced employment also is refuted, the railroads pointing out that, since they are using all the locomotives they have, it would not be possible to run more trains. Rigid application of the train limit laws would, therefore, the brief adds, only increase traffic congestion and retard the movement of essential shipments.

The brief was filed on behalf of the Atchison, Topeka & Santa Fe, Southern Pacific, Missouri-Kansas-Texas, Kansas City Southern, Missouri Pacific, St. Louis-San Francisco, and Chicago, Rock Island & Pacific.

Western Freight Volume One-Third More Than Year Ago

"Freight service volume of Western district railroads thus far in 1943 has been about one-third greater than a year ago," stated Z. G. Hopkins, representing the Western Railways' Committee on Public Relations, in an address before the Rotary Club at Dubuque, Iowa, on July 20. "Passenger service volume in the Western district," Mr. Hopkins continued, "has been considerably more than twice as great as a year ago. Increase in Western district volume, both freight and passenger, has been relatively greater than for the country as a whole, although transportation performed by all the country's railroads in the first half of the year has greatly exceeded all advance estimates as to the probable volume in 1943.

"Present prospects are that trends toward relatively greater traffic increases in the Western district than in some other sections will continue, for the reason that the scope of offensive military operations in the Pacific war zones is being steadily stepped up. The war load on Western railroads will not reach its peak until such Pacific operations have reached full scale. Western rail lines forming links in the nation's transcontinental transportation system now must be relied upon in military operations even more greatly than they were depended upon as aids to American development in periods of peace.

"In view of these prospects, related as they are to the nation's effectiveness in prosecution of the war, maintenance of present transportation capacity of the railroads is a matter vitally concerning every American. Substantial expansion of that capacity probably may not be practicable under war conditions, without diverting materials and man power from other war uses. Impairment of railroad capacity though would weaken direct war effort,

to say nothing of the effects of serious curtailment of transportation services for the accommodation of civilian and purely commercial traffic.

"Such trends, if either progressive or long continued, must finally seriously impair capacity of the railroads to serve the country as they now are doing. The question of new equipment for the railroads in amount at least equal to replacement requirements, and of supply of all materials necessary to their maintenance at their present capacity, consequently concerns every citizen and every soldier as greatly as it does the railroads."

Pullman-Standard Equipment a Big Factor in Sicily

Basing their computations on official dispatches from the Mediterranean theater of war, employees of Pullman-Standard Car Manufacturing Company have estimated they have shared in producing approximately 58 per cent of the chief ordnance weapons being used in the fight for Sicily.

Out of the 17 principal ordnance items hailed by the Army Ordnance Association for outstanding performance in the Tunisian campaign, 10 are being made in whole or in part by Pullman-Standard plants, it was pointed out. The 10 ordnance weapons that received special praise in the African victories, of which major components are made in Pullman-Standard plants are: M7 gun motor carriage, of which Pullman-Standard makes the gun mount mechanism and shells; 105 mm. howitzer on wheeled carriage, of which the company makes all except the gun itself, including shells; 3-in. gun on motor carriage, of which the gun mount mechanism is made by Pullman-Standard; 155 mm. howitzer shells; 155 mm. gun M1 shells; complete assembly on M4 General Sherman tank; all of a 3-in. anti-tank gun, except the gun itself; cases for 500-lb. aircraft bombs; outriggers and weldments for the carriage on 90 mm. anti-aircraft and anti-tank gun; and all of the 81 mm. mortars.

In addition, some of the large cargo planes which transported the men and equipment from North Africa to Sicily had their outer wings made in Pullman-Standard's aircraft division, and, although submarine patrol vessels, built by the company, did not participate in the Sicilian campaign, they constitute an important part of the company's war production program.

Board Rejects Demands of the Union's Engineers

A National Railway Labor Panel emergency board has filed with President Roosevelt a report recommending that existing agreements between the Union (Pittsburgh, Pa. and its employees represented by the Brotherhood of Locomotive Engineers be interpreted as precluding a claim for paid vacations until such vacations are granted to the same classes of employees on the trunk lines. The board also recommended rejection of another demand that the road agree to accommodate the employees involved in making requests for free transportation on foreign roads.

In the latter connection, the board

pointed out that the granting of free transportation is within the discretion of the lines upon which requests are made. It did, however, suggest, without making the suggestion a formal recommendation, that the Union might give serious consideration to the matter in the interest of "better labor relations." A third issue involving recognition by the management of the brotherhood's general committee was dropped before the proceeding reached the report-writing stage.

Members of the board were Chairman Elwyn R. Shaw, associate justice of the Illinois Supreme Court; Monsignor Francis J. Haas, dean of the School of Social Sciences of the Catholic University of America, recently appointed head of the new Committee on Fair Employment Practice; and James H. Wolfe, justice of the Supreme Court of Utah.

Cement Industry Ordered to Drop Basing-Point Plan

Allegations to the effect that the cement industry's basing-point delivered-price system has prevented purchasers from utilizing motor trucks or water carriers for the transport of cement and from obtaining benefits which might accrue from the use of such transportation agencies, and has frequently deprived agencies of the federal government of the benefit of all or part of railroad land-grant rates, are included in an order issued by the Federal Trade Commission this week. It is Order 3167, which orders the industry to cease and desist from selling cement at prices arrived at by use of the basing-point system.

Eastman Puts in a Good Word for the Trucks

Director Joseph B. Eastman of the Office of Defense Transportation made public on July 15 a statement which he had sent to various federal government officers in which he reviewed at some length the achievements of the domestic motor transportation industry in meeting the load imposed on it by wartime traffic. He then went on to call attention to certain dangers threatening the maintenance of this country's record which, he said, are even greater than those that threaten rail transportation. Among other "dangers" he mentioned the manpower shortage, inadequate provision of materials for new equipment, and the financial condition of certain operators in this field.

Speaking of the intercity truck service, Mr. Eastman said, "These trucks have taken away from the railroads a great amount of short-haul package and other high grade freight. With the load they are carrying, the railroads could not now take this freight back without disaster. The fact is, also, that it is the kind of freight to which railroad service is least well adapted. The trucks can handle it more efficiently. The loss of much such freight to trucks is one of the important factors that has enabled the railroads to increase the average speed of their freight operations very materially in recent years, and hence to get more service out of their equipment. This has contributed to their present fine showing."

KEEP FUEL-BURNING EFFICIENCY AT A MAXIMUM

Every railroad man is conscious of the wartime importance of each pound of coal.

To make it yield its utmost in steam production is imperative. This is one of the functions of the Security Sectional Arch.

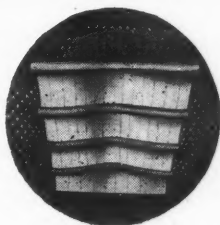
But only a complete arch can achieve the maximum in results. Hence the importance of having full length arches in all locomotives.

This is one sure way of stepping up fuel-burning efficiency.



**HARBISON-WALKER
REFRACTORIES CO.**

Refractory Specialists



**AMERICAN ARCH CO.
INCORPORATED**

60 EAST 42nd STREET, NEW YORK, N. Y.

*Locomotive Combustion
Specialists*

Supply Trade

A. C. F. Forecasts Large Post-War Demand for Freight Cars

In his annual report to the stockholders for the fiscal year ended April 30, 1943, Charles J. Hardy, president of the American Car & Foundry Co., predicted a heavy demand from domestic railroads after the war and possibly before then for new freight cars to replace those destroyed and worn out beyond repair by present continuous service. He forecast also that, with the coming of peace, the major part of the task of rehabilitating war-shattered countries will devolve on the United States and that this will require making here for use abroad necessary transportation equipment, both rolling stock and motive power, until these countries are sufficiently re-established to provide their own needs.

The company's net earnings for the fiscal year ended April 30, 1943, amounted to \$5,055,719 after all charges and tax provisions, or \$5.05 per share of common stock as compared with adjusted earnings because of renegotiation of \$7.28 per share for the previous year. Gross sales aggregated \$289,275,689 as compared with \$216,336,568 in the preceding year. Current assets totaled \$169,235,788 and current liabilities \$144,362,272 as compared with current assets of \$95,923,736 and current liabilities of \$56,553,484 on April 30, 1942.

The company was reported as unable to fill orders for a considerable number of new cars for domestic railroads now on its books because of the lack of government authorization for their building and its facilities for the manufacture of railroad equipment were set forth as largely engaged in supplying rolling stock to the Army for service here and abroad.

"During the year the activities of the company and its subsidiaries as prime producers of materials of warfare for our Government—combat tanks, armor plate, shells, bombs, fuses, valves, metal containers for the transportation of chemicals, minesweepers, lighters and other vessels for naval use besides an almost infinite variety of miscellaneous supplies—have continued at an intensified rate. Additionally, the company has been called upon to produce, for Army use both here and abroad, a very considerable number of cars of different kinds, comprising flat, tank, kitchen and gondola cars as well as cars designed to be used as hospitals on wheels. The vast amount of work the company has done and is doing—greater by far than at any previous time in its history is evidenced by the fact that the company entered upon its fiscal year now current with a back-log of business on its books having a money value of approximately \$350,000,000."

The front cover of the annual report this year shows in color a group of A. C. F.-built 13-ton light tanks firing into the night, and the rear cover a 1,000-lb. A. C. F. bomb against a background of a bomber plane and crew. The report features 36 pages of photographs of A. C. F.

plants listed in alphabetical order and showing the products each is producing both for war and for peace.

The Army-Navy "E" for continued production achievement has been awarded to the **American Welding Company**, subsidiary of the American Car & Foundry Company, at Carbondale, Pa.

The Maritime "M" for outstanding production achievement was awarded to the **Air Reduction Company**, its seven subsidiary companies and their 159 plants, factories and laboratories on July 17.

Thomas W. Pettus, sales manager of the **National Bearing Metals Corporation**, St. Louis, Mo., has been elected vice-president in charge of sales, with headquarters as before at St. Louis.

Palmer M. Craig, for the past two years chief engineer in charge of radar and radio communications equipment development, has been appointed chief engineer of the radio division of the **Philco Corporation**.

R. G. Cox, who has been with the industrial products organization of the **B. F. Goodrich Company** for the last 18 years, has been placed in charge of molded goods sales, to succeed E. R. Miller, who recently retired.

Beginning July 24 and continuing through part of September, the **American Car & Foundry** will display wartime products manufactured at its various plants in an exhibit at the John Wanamaker department store in Philadelphia, Pa.

C. A. Schroeder, manager of the Wisconsin-Minnesota district of the **Globe Steel Tubes Company** has been appointed manager at Cleveland, Ohio. **E. Gammeter**, formerly with the Carnegie-Illinois Steel Company at Chicago, has been appointed chief metallurgist for the company at Milwaukee, Wis.

Henry H. Howard, formerly manager, engine sales department, of the **Caterpillar Tractor Company**, Peoria, Ill., who has been on temporary emergency service with the United States Ordnance Department, has returned to the Caterpillar Tractor Company as general sales manager. **J. Q. McDonald**, acting general sales manager returns to his duties as export manager. **H. W. Smith**, assistant manager, engine sales department, has been advanced to manager of that department.

Charles S. Powell, district manager at Boston, Mass., has been appointed manager of the communications and merchandising department of the **Graybar Electric Company**, with headquarters in New York. **W. H. MacCrellish**, district manager at Cincinnati, Ohio, will succeed Mr. Powell at Boston, and **A. D. Hammond**, manager at Birmingham, Ala., will move to Cincinnati. **Douglas Wallace**, sales manager of the communications and merchandising departments at New York, has been appointed district manager at Pitts-

burgh, Pa., to succeed **A. R. Loughborough**, who will retire.

OBITUARY

Edward F. Kenney, metallurgical engineer on the staff of the vice president of operations of the Bethlehem Steel Company, died July 8, at Media, Pa. He was 74 years of age. Mr. Kenney began his career with the Pennsylvania as assistant engineer of construction, later becoming engineer of tests of the maintenance of way department with headquarters in Philadelphia, Pa.

Equipment and Supplies

LOCOMOTIVES

The **ERIE** has ordered six Diesel-electric road locomotives of 5,400 hp. for delivery in 1944 from the Electro-Motive Corporation. The locomotives, which will cost \$465,000 each, are reported to be scheduled for freight service between Marion, Ohio, and Meadville, Pa.

FREIGHT CARS

The **CANADIAN PACIFIC** expects to save approximately 850 tons of steel by the use of plywood in the construction of 750 new box cars now on order with the National Steel Car Company, the Canadian Car & Foundry Co. and the Eastern Car Company. In 500 of the new cars, 5/8-in. plywood has been specified for the outside steel sheathing formerly used, the inner wood lining being retained. The remaining 250 cars will use 1 1/2-in. wood put inside the steel side posts of the cars, replacing both the steel sheathing and inner wood lining. The plywood is hot-pressed, resin-bonded, and is bolted to the steel side posts of the car. The cars will be welded instead of riveted, with lighter castings throughout.

Abandonments

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—This road and the Chicago, Terre Haute & Southeastern, lessor, have applied to the Interstate Commerce Commission for authority to abandon operation of and to abandon, respectively, a line from Hymera, Ind., to Hawton, 4.34 miles.

LOUISIANA & ARKANSAS.—An application for authority to abandon a line from St. Francisville, La., to Angola, 19.62 miles, has been filed by this road with the Interstate Commerce Commission.

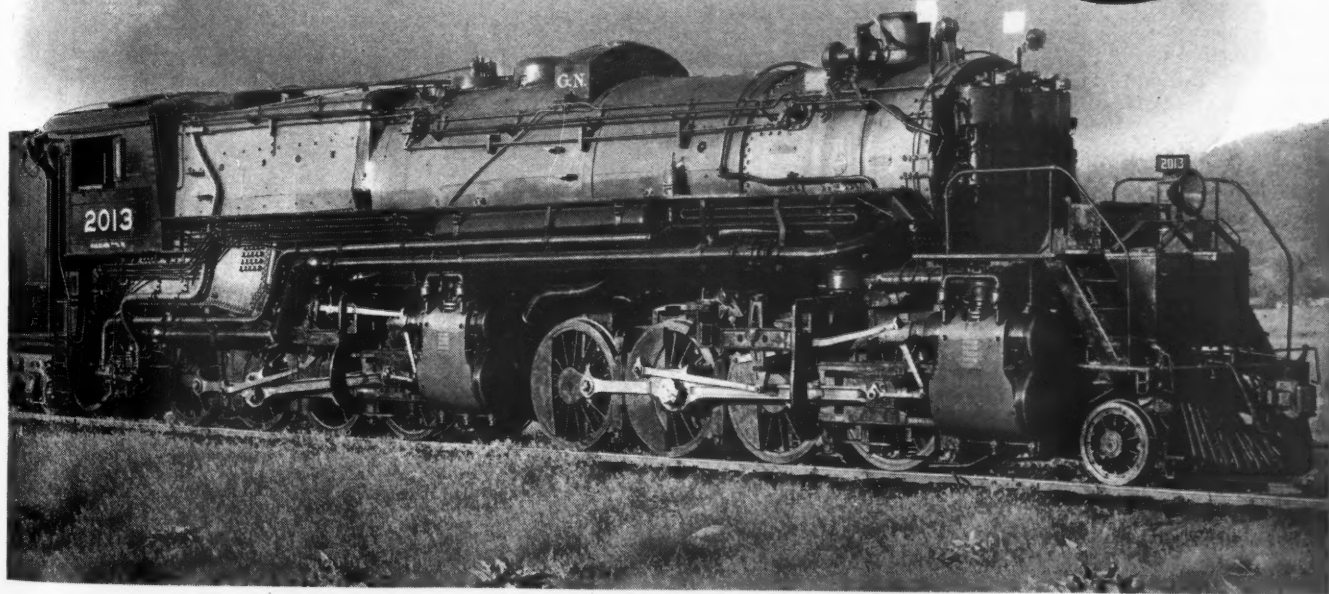
ST. LOUIS-SAN FRANCISCO.—This road has applied to the Interstate Commerce Commission for authority to abandon a segment of a branch from Lepanto, Ark., to West Ridge, 6.49 miles.

This Locomotive...

is equipped with an Elesco open type feedwater heater (exhaust steam injector), which is substantially lighter in weight than any other open type of feedwater heater of equal capacity . . . thereby saving vital material.

Locomotives with Elesco exhaust steam injectors have minimum amount of boiler maintenance. They cannot inject COLD WATER into the boiler.

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SUPERHEATERS • FEEDWATER HEATERS
AMERICAN THROTTLES • STEAM DRYERS
EXHAUST STEAM INJECTORS • PYROMETERS

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Representative of
AMERICAN THROTTLE COMPANY, INC.
60 East 42nd Street, NEW YORK
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Montreal, Canada
THE SUPERHEATER COMPANY, LTD.

Construction

CENTRAL OF NEW JERSEY.—This railroad has awarded a contract for the construction of a new float bridge at its Jersey City, N. J., freight terminal, at an estimated cost of \$43,775, to the Poirier & McLane Corporation of New York.

CHESAPEAKE & OHIO.—The C. & O. is preparing to ask for bids covering the following projects: construction of additional interchange facilities at Richmond, Va., at estimated cost of \$205,000; construction of five additional tracks at estimated cost of \$340,000 in the classification yard, and extension of five tracks at estimated cost of \$405,000 in receiving yard, at Russell, Ky.; extension of the yard lead at Peru, Ind., at estimated cost of \$56,500; and construction of a change of line and an addition to the bridge over the Hardware river, at Hardware, Va., at estimated cost of \$24,000.

ERIE.—The Pennsylvania Public Utility Commission has approved an application by the Erie for the construction of a connecting track, at grade, across the main track of the Bessemer & Lake Erie at Shenango, Pa., where the two railroads maintain an interchange. The interchange is not deemed adequate to properly handle the business now offered and the Erie proposes to construct, in addition to the connecting track, two additional tracks, each having a capacity of 38 cars. The cost of the improvement is estimated at \$41,286. A preliminary order temporarily approving the construction was issued by the commission on March 1.

LOUISVILLE & NASHVILLE.—This company has applied to the Interstate Commerce Commission for authority to construct a spur track 10.32 miles south from Cornettsville, Ky., to serve a coal mining area.

NEW YORK CENTRAL-PENNSYLVANIA.—The Pennsylvania Public Utility Commission has approved an application by these roads for the alteration of the crossing above grade where the main track of the Valley branch, Erie division of the New York Central, is carried over the main line track of the Renovo division of the Pennsylvania in Youngsville, Pa. The existing bridge consists of a steel through truss span 140 ft. in length and provides a vertical clearance of only 16.85 ft. above the track of the Pennsylvania, which is not adequate for many shipments of war material. The alteration proposes to raise the superstructure of the bridge 18 inches to provide an overhead clearance of 18.35 ft. and to raise and adjust 650 ft. of the New York Central's track. The cost of the improvement, which will be carried out by the New York Central, and paid for by the Pennsylvania, is estimated at \$15,150.

PENNSYLVANIA.—The Pennsylvania Public Utility Commission has approved plans calling for the alteration of a crossing at grade where a siding track and two main tracks of the Erie & Ashtabula division of the Pennsylvania cross Staunton avenue

in the cities of Sharon and Farrell by the construction of an additional siding track across the highway. Construction of the additional track is designed to expedite the handling of traffic between the railroad's classification yard at Wheatland and its local yard at Sharon thereby clearing the main tracks for through train movements. A preliminary order by the Commission temporarily approving the alteration was issued on April 12. Total cost of the improvement is estimated at \$20,617 of which \$12,450 is for 3,000 ft. of track.

Financial

N. J. Railroad Tax Legislation Voided by Court

On July 21 the New Jersey Court of Chancery declared unconstitutional provisions of the state's railroad tax settlement legislation of 1941 and 1942 calling for the long-term payment of delinquent taxes and the waiver of interest on unpaid taxes. The long-term payment of principal and forgiveness of interest were part of a railroad tax revision program designed by the legislature and Governor Charles Edison to end years of litigation over state revenue from the railroads. It provided that the carriers would be relieved of interest charges amounting to approximately \$24,000,000 for the years 1932-1940, inclusive, provided they paid back taxes of about \$34,000,000 over periods ranging up to 20 years. It also set up a new formula for taxation in the years after 1940. Vice-Chancellor Wilfred H. Jayne's opinion held that the interest-waiving constituted an unlawful gift of state funds and that the annulment by the legislature of a fixed and vested financial obligation due from a private corporation to the state was unconstitutional unless supported by some legal or moral consideration, which the state did not receive in this case.

Attorney General David T. Wilentz had contended that delinquent taxes amounted to \$45,000,000 with accrued interest proportionately greater. Pending final determination of the actual delinquencies and probable appeals of the decision, the court continued a previously granted temporary injunction restraining the state treasurer from disbursing about \$16,000,000 in delinquencies paid by the railroads on the basis of the lower figure.

The decision constituted an important victory for Mayor Frank Hague of Jersey City, which municipality contains a large proportion of the railroads' taxable property and would have suffered the severest losses. The railroads involved in the settlement and the principal amount of their unpaid taxes at the time of the passage of the legislation are as follows: Central of New Jersey, \$13,460,000; Delaware, Lackawanna & Western, \$7,345,000; Erie, \$4,702,000; Lehigh Valley, \$4,551,000; New Jersey & New York, \$287,000; New York & Long Branch, \$378,000; New York Central, \$2,707,000; New York, Susquehanna & Western, \$1,217,000; Pennsylvania, \$12,000; and the Reading, \$128,000.

ATLANTIC COAST LINE.—*Extension of Bond Maturity.*—Division 4 of the Interstate Commerce Commission has authorized this company's subsidiary, the Virginia & Carolina Southern, to extend to July 1, 1953, the date of maturity of \$524,000 of first mortgage 5 per cent gold bonds, all of which this company owns.

CAROLINA, CLINCHFIELD & OHIO.—*Bond Redemption.*—The trustee under this company's first mortgage, J. P. Morgan & Co., has called for redemption on September 1 \$115,000 principal amount of its 4 per cent Series A bonds issued under this mortgage, due 1965. The call price is 107½. Bonds to be redeemed have been chosen by lot and are payable at the L. & N. office in New York, 71 Broadway.

CHESAPEAKE & OHIO.—*To Redeem Preference Stock, Series A.*—On July 19, the board of directors authorized the redemption, on October 1, next, of the company's entire outstanding preference stock, Series A. This stock, of which 152,530 shares were outstanding on June 30, last, is to be redeemed at a price of \$107.50 a share, together with a dividend of one dollar per share declared at the meeting of the board, payable on October 1.

CHICAGO GREAT WESTERN.—*Dividend on Preferred Stock.*—On July 20, directors voted a dividend of 62½ cents a share on the 5 per cent preferred stock, applicable to arrearages. The dividend is payable on September 30 to stockholders of record September 16, and will reduce accumulations on this stock to \$3.12½ a share.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Reorganization.*—This road, pointing out that the Interstate Commerce Commission has taken no formal evidence since March 22, 1938, in the proceedings out of which its plan for this company's reorganization developed, although there have been since that time substantial changes in many conditions affecting its financial position and earning power, has petitioned the commission to reopen the case for further hearings for the purpose of reconsidering the entire plan of reorganization. The commission on July 17 denied a petition on behalf of a bondholders' protective committee for reopening the proceedings to permit filing a modified plan for reorganization.

CHICAGO, ROCK ISLAND & PACIFIC.—*Authorized to Purchase Equipment Trust Certificates.*—On July 15, Federal Judge William J. Campbell authorized Joseph B. Fleming and Aaron Colnon, trustees of the Rock Island, to purchase \$369,000 worth of equipment trust certificates, Series T, issued by the railroad on September 1, 1940, and maturing on November 1, 1949, May 1, 1950 and November 1, 1950.

According to the petition for the authorization, the owner of the certificates is willing to sell for 102½ per cent of par value, plus accrued dividends of two per cent annually.

CHICAGO, ROCK ISLAND & PACIFIC.—*Bondholders to Submit Amended Plan of Reorganization.*—The committee for holders of the first and refunding obligation of

the Chicago, Rock Island & Pacific Railway has proposed an amendment to the Interstate Commerce Commission plan for reorganization of the road, in which \$38,000,000 in cash and \$12,409,600 in first mortgage bonds would be utilized for an additional distribution to creditors, thus "improving the treatment of all classes of creditors."

A copy of the proposed amendment to the plan will be filed soon with both the commission and Federal Judge Michael L. Igou of the Chicago Federal District Court.

COLORADO & SOUTHERN.—Debt Reduction Authorized.—On July 20, the Federal district court in Denver, Colo., authorized the expenditure of \$1,000,000 to purchase and retire obligations of the C. & S. The cash will be advanced by the Fort Worth & Denver City, a subsidiary of the C. & S., and the purchase, when effected, will mark a further step in the debt adjustment program of the parent road, originally approved by the Federal court in March. The Reconstruction Finance Corporation has approved the latest move.

Under the order entered, a price of 48 and accrued interest will be offered to holders of general mortgage 4½s of 1980, whose recent tenders on advertised requests could not be accepted. At that time, the Ft. W. & D. C., authorized to invest only \$2,000,000, was able to purchase \$4,171,000 par value of the bonds at an average price of \$47.95 and accrued interest. A total of \$7,500,000 was offered.

COWLITZ, CHEHALIS & CASCADE.—Promissory Notes.—This road has filed a supplementary application with the Interstate Commerce Commission seeking an amendment to the commission's approval of its plan to issue \$75,000 of promissory notes to provide for notes without interest instead of the 4 per cent interest approved, as reported in this column in the issue of May 29, page 1118.

ERIE.—Trackage Rights.—Division 4 of the Interstate Commerce Commission has approved this road's application for authority to operate under trackage rights over a 1-mile segment of a line of the Lehigh Valley in the vicinity of Avoca, Pa., to gain access to a colliery.

GREAT NORTHERN.—Liquidation of Subsidiary.—This company has applied to the Interstate Commerce Commission for authority, as a step in its plan for the tax-free liquidation of a subsidiary company, the Brandon, Devils Lake & Southern, (1) to acquire all the property of that company, including stock control of the Farmers' Grain & Shipping Company held by it, (2) to acquire other outstanding stock of the shipping company, (3) to acquire the railway property of the shipping company, and (4) to operate the lines of the two subsidiary companies.

MISSOURI PACIFIC.—Compromise Plan of Reorganization Submitted.—Federal Judge George H. Moore has taken under advisement a request that a compromise plan of reorganization be sent to the Interstate Commerce Commission. This plan, which was submitted to Judge Moore on

July 16 and which was agreed upon by committees representing the first and refunding mortgage and the junior bonds, utilizes some \$54,000,000 of cash to improve the treatment of practically all classes of security holders. One item proposes that the income bonds be increased by approximately \$38,500,000, and another that the new common stock be divided into two classes, one of which would have preference as to dividends and in liquidation. The Reconstruction Finance Corporation has not been asked to join in sending the plan back to the I. C. C. but will be asked to accept it, when and if the Federal court submits the plan to the commission.

RUTLAND.—Bond Payment Hearing Set.—The United States district court for Vermont has set August 4 as the date for a hearing on a petition for payment of \$366,790 in back interest due in 1937 and 1938 on Rutland first consolidated 4½ per cent bonds, Ogdensburg & Lake Champlain first mortgage bonds and Rutland Canadian bonds. The petition claims that cash on hand far exceeds the amount necessary to operate and maintain the properties.

SEABOARD AIR LINE.—Reorganization.—Tazewell Taylor, special master appointed to expedite reorganization of the Seaboard Air Line filed his final reorganization plan in the United States district court at Norfolk, Va., on July 20. Hearings on the plan will begin on October 18. The plan recommended that the reorganization committee be composed of three members, one to be nominated by the underlying bondholders' committee, one by the first and consolidated bondholders' committee, each of whom after nomination shall be subject to approval by the courts, and one appointed by the courts as the representative of the remaining creditors entitled to participate under the plan. (See *Railway Age* of June 26, page 1283, for recommended capitalization of the reorganized company.)

WILLAMINA & GRAND RONDE.—Acquisition of Control.—The Long-Bell Lumber Company has applied to the Interstate Commerce Commission for formal approval of its acquisition of the stock of this company, transferred to it in December, 1942, by the Miami Corporation.

Average Prices Stocks and Bonds

	July 20	Last week	Last year
Average price of 20 representative railway stocks..	39.00	39.45	26.48
Average price of 20 representative railway bonds..	80.23	80.36	64.35

Dividends Declared

Chicago Great Western.—5 Per Cent Preferred, 6½¢, payable September 30 to holders of record September 16.
Dallas Railway & Terminal.—7 Per Cent Preferred, \$1.75, quarterly, payable August 2 to holders of record July 22.
Louisville, Henderson & St. Louis.—Common, \$4.00, semi-annually; 5 Per Cent Non-cumulative Preferred, \$2.50, semi-annually, both payable August 16 to holders of record August 1.
Louisville & Nashville.—(Increased) \$3.00, Payable August 30 to holders of record July 27.
Saratoga & Schenectady.—Irregular, \$2.50, payable July 15 to holders of record July 1.
Wheeling & Lake Erie.—5½ Per Cent Convertible Preferred, \$1.38, quarterly; 4 Per Cent Prior Lien, \$1.00, quarterly, both payable August 1 to holders of record July 26.

Railway Officers

EXECUTIVE

Eric A. Leslie, comptroller of the Canadian Pacific, has been appointed vice-president and comptroller, in charge of the company's accounting department, with headquarters as before at Montreal, Que.

H. W. Klein, freight traffic manager of the Southern Pacific at Portland, Ore., has been appointed assistant vice-president, system freight traffic, with headquarters at San Francisco, Cal.

F. D. Lemmon, assistant to vice-president and assistant secretary of the Atlantic Coast Line, has been elected acting vice-president, with headquarters as before at New York.

George Durham, vice-president and general manager of the Wheeling & Lake Erie, has been promoted to executive vice-president and general manager, a newly-created position, with headquarters as before at Cleveland, Ohio. **R. F. Smith**, general traffic manager at Cleveland, has been advanced to vice-president in charge of traffic, with the same headquarters.

OPERATING

C. H. Richards, terminal trainmaster of the Baltimore & Ohio at Akron Junction, Ohio, has been transferred to New Castle Junction, Pa.

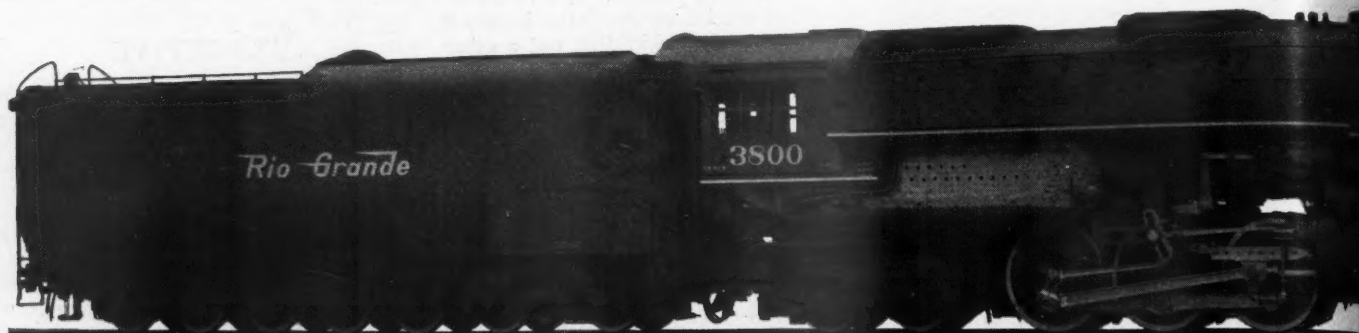
F. W. Trimmer has been appointed assistant trainmaster of the Syracuse division of the New York Central, with headquarters at Syracuse, N. Y.

L. A. Foster, auditor of the Yosemite Valley, has been promoted to general manager, with headquarters as before at Merced, Cal., succeeding **W. L. White**, who has resigned.

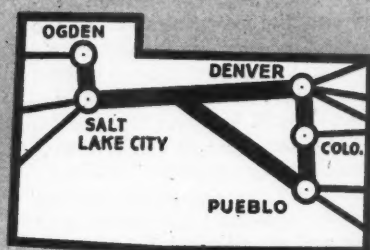
L. J. Federer has been promoted to the newly created position of terminal trainmaster of the Chesapeake & Ohio, with headquarters at Elk, W. Va. The position of assistant trainmaster, Charleston terminal, formerly held by Mr. Federer, has been abolished.

J. L. Carrier, car service agent of the Tennessee Central, has been appointed superintendent of car service, a change in title, with headquarters as before at Nashville, Tenn. **C. B. Gotto** has been appointed car accountant, with headquarters at Nashville.

E. W. Chapman, assistant superintendent of the Canadian National at Edmundston, N. B., has been appointed superintendent of terminals at Sydney, N. S., and **P. W. Caldwell** has been appointed assistant superintendent, with headquarters at Edmundston. **W. E. Eakin**, supervisor of freight train service has been appointed transportation inspector, with headquarters



KEEPING PACE



Rio Grande





at Toronto, Ont. **A. A. Chisholm**, supervisor of fire protection, has been appointed supervisor of fire and accident prevention, with headquarters at Moncton, N. B.

A. P. Linnell, assistant to the general manager of telegraphs and telephones on the Canadian National at Toronto, Ont., has been promoted to general superintendent of telegraphs and telephones, Western region, with headquarters at Winnipeg, Man., succeeding **J. G. Davies**, who has retired.

G. A. Hill, superintendent of motive power and cars of the Wheeling & Lake Erie, has been promoted to general superintendent in charge of train, station and yard operations, and maintenance of way and structures, with headquarters as before at Brewster, Ohio. **G. E. Durham**, assistant to the superintendent of motive power and cars, has been advanced to superintendent of motive power and cars, with headquarters as before at Brewster, succeeding Mr. Hill.

Miles R. Dwyer, whose appointment as division superintendent of the New York Central, with headquarters at Buffalo, N. Y., was announced in the *Railway Age* of July 17, was born on August 26, 1889, at



Miles R. Dwyer

Virgil, N. Y. Mr. Dwyer entered railroad service in September, 1905, as clerk of the New York Central at DeWitt yard, E. Syracuse, N. Y., and subsequently served at that point as conductor, yardmaster, and assistant general yardmaster, successively. In January, 1920, he was appointed general yardmaster, Belle Island yard, Syracuse, N. Y., and on September 5, 1925, he became trainmaster at Buffalo, N. Y. Mr. Dwyer was appointed assistant division superintendent at Buffalo on November 1, 1939, and was maintaining that position at the time of his recent appointment as division superintendent at that point. Mr. Dwyer is a member of the Society of American Military Engineers and is a lieutenant colonel, 701st Engineer Headquarters, Railway Grand Division, Officers Reserve.

Chester A. Raymonda, whose appointment as assistant general manager of the New York Central, Line East, with headquarters at Syracuse, N. Y., was announced

in the *Railway Age* of July 17 was born on November 30, 1878, at Herkimer, N. Y. Mr. Raymonda entered railroad service in October, 1902, as telegraph operator on the Mohawk division of the New York Central, and in 1907 was appointed train dispatcher at Utica, N. Y., becoming trainmaster at that point in 1912. From March, 1921, to January, 1927, in addition to maintain-



Chester A. Raymonda

ing his position as trainmaster of the New York Central, Mr. Raymonda served as superintendent of the New York State railways, Oneida line, at Utica. In 1927 he was appointed assistant superintendent of the New York Central at Syracuse, and in December, 1936, he was advanced to superintendent at Rochester, N. Y. In November, 1937, Mr. Raymonda was transferred to Buffalo, remaining in that position until the time of his recent appointment as assistant general manager.

FINANCIAL, LEGAL AND ACCOUNTING

Leon Z. McPherson has been appointed solicitor of the Canadian National, with headquarters at Toronto, Ont.

C. H. Diamond has been appointed freight claim agent of the Reading and acting freight claim agent of the Central of New Jersey, with headquarters at Philadelphia, Pa., succeeding **Edward Dixon**, who has resigned.

J. O. McCort, auditor of the Wheeling & Lake Erie, has been promoted to comptroller, with headquarters as before at Cleveland, Ohio. **J. T. Schenkel** has been appointed auditor, succeeding Mr. McCort.

Charles B. Anderson, freight claim agent and car accountant of the Chicago & Eastern Illinois, with headquarters at Chicago, died in that city on July 13. Mr. Anderson was born at Momence, Ill., on August 7, 1874, and entered railway service in January, 1891, as a messenger of the C. & E. I. at Chicago. He subsequently served as assistant chief clerk and assistant cashier, cashier, and local freight agent with the same headquarters, and in 1917 he was promoted to superintendent of

transportation at Chicago. In 1927 Mr. Anderson was advanced to special representative of the vice-president in charge of operations, and six years later he was appointed to the position he held at the time of his death.

TRAFFIC

Warren P. Knowlden has been appointed assistant general baggage agent of the New York Central, with headquarters at Buffalo, N. Y.

Joseph A. Armento, district freight agent of the Pennsylvania at New Haven, Conn., has been transferred to Chicago, succeeding **O. Clifford Grimshaw**, who has been transferred to Altoona, Pa.

A. A. LeBlanc has been appointed general agent of the Canadian National, with headquarters at New Carlisle, Que., and **W. J. Riesberry** has been appointed general agent in the freight traffic department, with headquarters at Toronto, Ont.

B. J. King has been appointed assistant general freight agent of the Seaboard Air Line, with headquarters at Miami, Fla., succeeding **F. G. Roberts**, whose appointment as assistant freight traffic manager was announced in the *Railway Age* of July 17.

W. M. Hugle has been appointed general agent of the Quanah, Acme & Pacific, with headquarters at Chicago, succeeding **Roy L. Thompson**, who has resigned. **L. B. Williams** has been appointed general agent, with headquarters at Pittsburgh, Pa., replacing **Roy C. Klostermeyer**, who has resigned.

J. S. Switzer, division freight agent of the New York Central at Bay City, Mich., has been promoted to assistant general freight agent, with headquarters at Detroit, Mich., succeeding **J. H. Becker**, who has resigned. **G. R. Peterson**, assistant coal freight agent at Detroit, has been advanced to division freight agent, with headquarters at Bay City, succeeding Mr. Switzer.

C. C. Kelsey, district freight agent of the Pennsylvania at Trenton, N. J., has been promoted to coal freight agent, with headquarters at Boston, Mass. **Elmer R. Norris**, chief clerk to the district freight agent at Wheeling, W. Va., has been advanced to district freight agent, with headquarters at Nashville, Tenn., succeeding **James M. C. Collins**, who has been transferred to Trenton, replacing Mr. Kelsey.

James R. Getty, whose appointment as general passenger agent of the Seaboard Air Line, with headquarters at Miami, Fla., was announced in the *Railway Age* of June 26, was born on September 26, 1914, at Oaks, Pa., and attended the University of Pennsylvania. From 1934 until January, 1936, Mr. Getty served as tourist agent of the American Express Company at Philadelphia, Pa., becoming ticket clerk of the Pennsylvania at Wilmington, Del., on the latter date. In December, 1937,



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LATROBE, PA.



July 24, 1943

he went with the Seaboard Air Lines as traveling passenger agent at Philadelphia. Mr. Getty became district passenger agent at Philadelphia in November, 1940, and one year later he was transferred to Miami, Fla., the position he held at the time of his recent appointment as general passenger agent at Miami.

Harry A. Mintz, whose promotion to general freight agent of the Chicago & North Western system, with headquarters at Chicago, was reported in the *Railway Age* of July 10, was born at St. Paul, Minn., on November 6, 1889, and entered railway service in 1908 as an office boy of the Chicago, St. Paul, Minneapolis & Omaha (part of the North Western system). He served in various capacities until 1920 when he was appointed chief clerk of the tariff bureau, with headquarters at St. Paul. Two years later he was advanced to assistant general freight agent, and in 1929 he was promoted to general freight agent, with the same headquarters. In 1937 Mr. Mintz was appointed tariffs and divisions manager, the position he held at the time of his new appointment, effective July 1.

D. J. McGanney, assistant vice-president, system freight traffic, of the Southern Pacific at San Francisco, Cal., has been promoted to general traffic manager, with headquarters at Chicago, succeeding **Sherman K. Burke**, whose death on July 1 was reported in the *Railway Age* of July 10. Mr. McGanney will have supervision of freight and passenger traffic in the Middle Western, Eastern and Southeastern states. **L. A. Brockwell**, assistant to freight traffic manager at San Francisco, has been promoted to freight traffic manager, with headquarters at New York, succeeding **W. G. Peoples**, who has been transferred to San Francisco, while **F. C. Nelson**, freight traffic manager at San Francisco, has been transferred to Portland, Ore. **H. L. Smith**, assistant general freight agent, has been appointed assistant to freight traffic manager in charge of rates and divisions, with headquarters as before at San Francisco.

Wesley James Ficht, whose appointment as general passenger agent of the Seaboard Air Line with headquarters at Tampa, Fla., was announced in the *Railway Age* of June 26, was born on February 27, 1902, at Callery, Pa. Mr. Ficht entered railroad service in June, 1920, as clerk in the accounting department of the New York Central at Grand Central Terminal, New York, becoming ticket seller at that point in January, 1921. In March, 1924, he left the employ of New York Central to become assistant city ticket agent of the Seaboard Air Line at St. Petersburg, Fla., and one month later was promoted to city ticket agent at that point. He became district passenger agent at St. Petersburg in August, 1927, and in May, 1931, was transferred to Buffalo, N. Y. In April, 1932 Mr. Ficht was appointed traveling passenger agent at Pittsburgh, Pa., subsequently being transferred to Chicago and then to Tampa. He became district

passenger agent at Atlanta, Ga., in February, 1936, and in December of the same year he was advanced to assistant general passenger agent at Norfolk. Mr. Ficht was promoted to assistant general passenger agent at Norfolk in December, 1940, and remained in that position until his recent promotion.

Julius J. Alms, whose promotion to general passenger agent of the Chicago, Burlington & Quincy, with headquarters at Omaha, Neb., was reported in the *Railway Age* of July 17, was born at Bensenville, Ill., on January 30, 1905, and entered railway service on the Burlington on September 26, 1921, as an office boy at Chicago, subsequently serving at that point as ticket stockroom clerk, reservations clerk and ticket agent of the general passenger office. On March 15, 1933, he was appointed special representative at the Burlington's Century of Progress exhibit in Chicago and one year later he was advanced to passenger rate clerk. On August 1, 1936, Mr. Alms was promoted to assistant chief clerk, passenger department, at Chicago, and on March 15, 1938, he was advanced to chief clerk, with the same head-



Julius J. Alms

quarters. On September 1, 1942, he was promoted to assistant general passenger agent, with headquarters at Chicago, holding that position until his new appointment, which becomes effective on August 1.

T. P. Hinchcliff, whose promotion to assistant general passenger traffic manager of the Chicago, Burlington & Quincy, with headquarters at Chicago, was reported in the *Railway Age* of July 17, was born at Amboy, Ill., on April 8, 1882, and entered railway service on January 1, 1899, as a clerk in the superintendent's office of the Colorado & Southern in Denver, Colo. On September 1, 1903, he was promoted to city freight agent at St. Louis, Mo., and on May 1, 1904, he was appointed traveling freight agent, with headquarters at Chicago. On July 1, 1910, he was appointed city freight agent for the Burlington at Cleveland, Ohio, and two months later he was transferred to Detroit, Mich. Mr. Hinchcliff was promoted to chief clerk to the assistant general freight agent at Chicago on March 1, 1915, and three

years later he was advanced to general agent at Detroit. Two months later he was appointed chief clerk in the regional director's office at Chicago, and on March 1, 1920, he was reappointed general agent at Detroit. On January 1, 1925, he was promoted to assistant general passenger agent at Chicago and on January 1, 1926, to general passenger agent at St. Louis.



T. P. Hinchcliff

Mr. Hinchcliff was appointed assistant general passenger agent at Omaha on April 1, 1933, and in March, 1939, he was promoted to general passenger agent, with the same headquarters, holding that position until his new appointment which becomes effective August 1.

Justin J. Nolan, general passenger agent of the Pullman Company, has been promoted to assistant passenger traffic manager, a newly-created position, with headquarters as before at Chicago. **Howard Lowder**, assistant general passenger agent, at Chicago has been advanced to general passenger agent with the same headquarters, succeeding Mr. Nolan.

Mr. Nolan was born at Hartland, Ill., on April 19, 1898, and served in the U. S.



Justin J. Nolan

Army during World War I. Upon his return he became connected with a commercial house in Chicago and a few months later, on August 18, 1919, he went with the Pullman Company as an audit clerk in the commissary department. A short time

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later, Mr. Nolan was transferred to the passenger department, and during the next six years he broadened his experience by winter ticket selling in Southern resorts, becoming district passenger agent out of Chicago on June 16, 1925. On January 1, 1937, he was promoted to assistant general passenger agent, and in August, 1942, he was advanced to the position he held at the time of his new appointment, effective July 22.

William J. Kenealy, whose appointment as assistant passenger traffic manager of the Seaboard Air Line, with headquarters at Jacksonville, Fla., was announced in the *Railway Age* of June 26, was born on May 5, 1891, at Baltimore, Md., Mr. Kenealy entered railroad service on June 5, 1909, as information clerk of the Pennsylvania at Baltimore and in December, 1910, he entered the service of the Pullman Company, serving as conductor and ticket agent first at Baltimore, and then successively at Harrisburg, Pa., Philadelphia, and Jacksonville. In January, 1925, he went with the Seaboard as traveling passenger agent, with headquarters at Jacksonville, becoming district passenger agent at that point in August, 1927, and division passenger agent there in September, 1929. Mr. Kenealy was appointed general passenger agent at Jacksonville in January, 1937, and remained in that position until his recent appointment as assistant passenger traffic manager.

Forest G. Roberts, whose appointment as assistant freight traffic manager, of the Seaboard Air Line, with headquarters at Miami, Fla., was reported in the *Railway Age* of June 17, was born on May 22, 1881, at Swainsboro, Ga. Mr. Roberts entered railroad service on August 1, 1900, as a messenger of the Central of Georgia at Guyton, Ga., later serving as agent at Parish, Ga. On December 25, 1901, he became telegraph operator and agent of the Seaboard Air Line, with headquarters first at Woodford, S. C., and subsequently at Cayce, S. C., Savannah Yard, Ga., and Daisy. He left the employ of the Seaboard Air Line in April 1903, to become a clerk of the Macon, Dublin & Savannah, subsequently serving as telegraph operator and dispatcher, at Dublin, Ga., and Macon, successively. In January, 1906, Mr. Roberts went with the Atlanta & West Point as accountant in the auditor's office at Atlanta, Ga., and in March, 1907, he left the services of that road to become rate clerk to the assistant general freight agent of the Nashville, Chattanooga & St. Louis at Atlanta, remaining in that position until March, 1908, when he became rate clerk in the office of the general freight agent of the Southern at Atlanta. Six months later Mr. Roberts returned to the employ of the Seaboard Air Line as rate clerk at Atlanta, Ga., and in June, 1912, he was transferred to Savannah, Ga. Subsequently, from November, 1912, to August, 1920 he served successively as traveling freight agent at Cordele, Ga., and commercial agent at Cordele and later at Greenville, S. C., being granted a leave of service on the

latter date. He returned to the employ of the Seaboard Air Line as commercial agent at Tampa, Fla., in December, 1920, and in December, 1925, he was appointed district freight agent at Miami, becoming division freight agent at that point in January, 1927. Mr. Roberts was appointed assistant general freight agent at Miami, in June, 1927, and remained in that capacity until his recent appointment as assistant freight traffic manager.

John Daniel Makinson, whose appointment as general passenger agent of the Seaboard Air Line, with headquarters at Norfolk, Va., was announced in the *Railway Age* of June 26, was born on June 12, 1894, at Baltimore, Md., and attended Virginia Polytechnic Institute. Mr. Makinson entered railroad service in March, 1913, as stenographer for the general freight agent of the Seaboard Air Line at Norfolk, leaving the employ of that road in August, 1913, to become stenographer-clerk for the general passenger agent of the Norfolk Southern at Norfolk. He returned to the Seaboard Air Line at Norfolk in August, 1914, as refund clerk for the general passenger agent, and in June, 1916, he became division clerk for the auditor passenger accounts at Portsmouth, Va. In September, 1918, Mr. Makinson was appointed chief rate clerk in the general passenger department of the Norfolk Southern at Norfolk, and in August, 1920, he returned to the Seaboard Air Line to serve as rate clerk in the general passenger department at Norfolk. He became road foreman of the Kempsville district of Princess Anne County, Va., in January, 1924, and in May of that year, he returned to his position as rate clerk in the general passenger department of the Seaboard Air Line at Norfolk. He was appointed assistant office manager at that point in August, 1927, and in April, 1932, became chief rate clerk, becoming chief clerk in July, 1936 and assistant to general passenger agent in December of that year. In December, 1940, Mr. Makinson was advanced to assistant general passenger agent, the position he held at the time of his recent promotion.

ENGINEERING & SIGNALING

A. G. Humphries, general scale inspector of the Southern Pacific at West Oakland, Cal., has been promoted to engineer, water service, with headquarters at San Francisco, Cal.

Thomas H. Friedlin has been appointed timber engineer of the New York Central system, with headquarters at New York. As timber engineer, Mr. Friedlin will have supervision of inspection and preservation of forest products.

Richard Warren Grigg, division engineer of the Cleveland division of the Pennsylvania at Cleveland, Ohio, has been transferred to the Long Island with headquarters at Jamaica, N. Y., succeeding **Morton S. Smith**, whose appointment as superintendent of the Logansport division of the Pennsylvania, with headquarters

at Logansport, Ind., was reported in the *Railway Age* of July 3.

Charles McDiarmid has been appointed chief engineer of the Georgia & Florida, with headquarters at Augusta, Ga., succeeding **H. B. Holmes**, who has retired at his own request. The position of assistant chief engineer, formerly held by Mr. McDiarmid, has been abolished.

H. L. Holderman, supervisor of the Escanaba tie treating plant of the Chicago & North Western at Escanaba, Mich., has been promoted to acting division engineer of the Black Hills division, with headquarters at Chadron, Neb., succeeding **H. L. Barr**, who has been granted leave of absence to enter military service.

MECHANICAL

K. L. Selby has been appointed mechanical engineer of the Alton, with headquarters at Chicago, a newly-created position.

M. J. Brady, locomotive foreman of the Canadian National at Kindersley, Sask., has been promoted to master mechanic, with headquarters at Calgary, Alta., succeeding **A. H. E. Parkes**, who has been transferred to Edmonton, Alta., with jurisdiction over the Edson division. **W. G. McConachie** remains at Edmonton as master mechanic of the Edmonton division.

W. H. Longwell, master mechanic of the Baltimore & Ohio at Grafton, W. Va., has been transferred to Cumberland, Md., succeeding **I. L. Harper**, and **E. Stimson, Jr.**, master mechanic at Benwood, W. Va., has been transferred to Grafton, succeeding Mr. Longwell, while **R. A. Conner**, master mechanic at Holloway, Ohio, has been transferred to Benwood, succeeding Mr. Stimson.

PURCHASES AND STORES

W. M. Hughes has been appointed division storekeeper of the Baltimore & Ohio, Riverside, Baltimore, Md., succeeding **H. Lauman** who has been appointed senior assistant storekeeper, Mt. Clare, Baltimore, succeeding **G. H. Flagg**, who has been appointed acting storekeeper, bolt and forge shop, at Cumberland, Md.

OBITUARY

A. R. Howard, who retired in 1928 as secretary and treasurer of the International-Great Northern, with headquarters at Palestine, Tex., died recently at Houston, Tex.

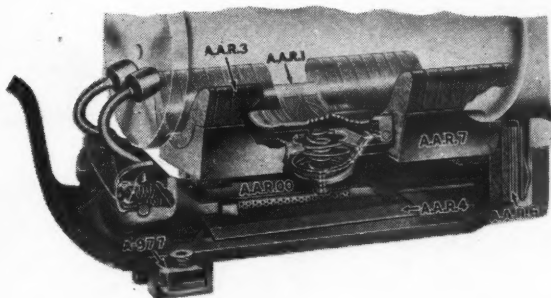
John M. Rosevear, who retired as general comptroller of the Canadian National at Montreal, Que., in 1930, died on July 15 at a hospital in Montreal. He was 73 years old.

The Augusta, Ga. works of the **Babcock & Wilcox Company**, has been granted a renewal of its Army-Navy "E" award for continued production achievement.

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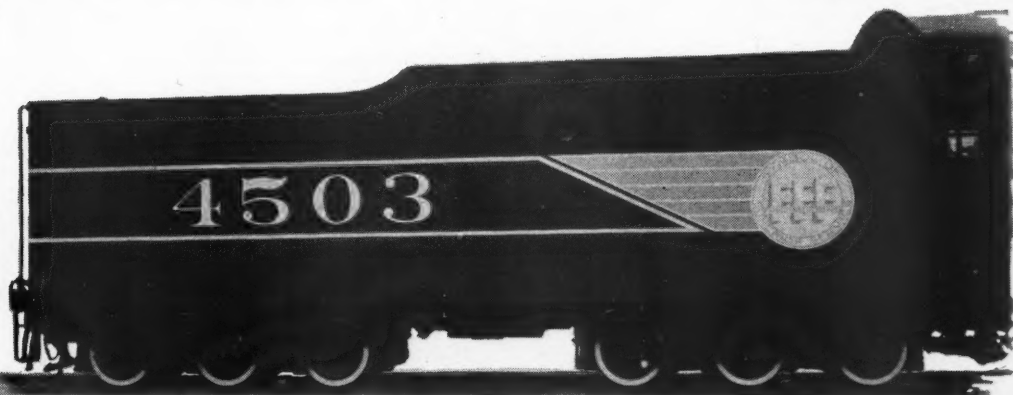
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